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ENCYCLOPÆDIA.

GOBBO (Pietro Paolo Cortoneſe, ſo called), a celebrated painter of fruit and landſcapes, was born at Cortona in 1580, and learned the principles of deſign from his father; but was afterwards the diſciple of one Creſcentio at Rome, and perfected himſelf in the moſt eſſential parts of his profeſſion, by ſtudying after nature, with judgment and accuracy. His merit ſoon recommended him to the notice and eſteem of the moſt able judges at Rome; and as he excelled equally in painting fruit and landſcape, he found a generous patron in cardinal Borgheſe, who employed him to adorn his palace. The fruit which he painted had ſo true and expreſſive an imitation of nature, that nothing could poſſibly be more exact; and by his thorough knowledge of the chiaro-ſcuro, he gave an extraordinary roundneſs and relief to every object. But his greateſt excellence conſiſted in his colouring; for in deſign he was not remarkably ſuperior to others. He died in 1640.

GOBELIN (Giles), a famous French dyer, in the reign of Francis I. diſcovered a method of dying a beautiful ſcarlet, and his name has been given ever ſince to the fineſt French ſcarlets. His houſe, in the ſuburb of St Marcel at Paris, and the river he made uſe of, are ſtill called *the Gobelins*. An academy for drawing, and a manufactory of fine tapeſtries, were erected in this quarter in 1666; for which reaſon the tapeſtries are called *the Gobelins*.

GOBIUS, in ichthyology, a genus of fiſhes belonging to the order of thoracici. They have two holes between the eyes, four rays in the membrane of the gills, and the belly-fins are united in an oval form. There are eight ſpecies, principally diſtinguiſhed by the number of rays in their fins.

GOBLET, or Gobelet, a kind of drinking cup, or bowl, ordinarily of a round figure, and without either foot or handle. The word is French, *gobelet*; which Salmaſius, and others, derive from the barbarous Latin *cupa*. Budeus deduces it from the Greek κυπελλον, a *ſort of cup*.

GOD, one of the many names of the Supreme Being. See Christianity, Metaphysics, Moral Philosophy, and Theology.

God is alſo uſed in ſpeaking of the falſe deities of the heathens, many of which were only creatures to which divine honours and worſhip were ſuperſtitiouſly paid.

The Greeks and Latins, it is obſerveable, did not mean by the name *God*, an all-perfect being, whereof eternity, infinity, omnipreſence, &c. were eſſential attributes: with them, the word only implied an excellent and ſuperior nature; and accordingly they gave the appellation *gods* to all beings of a rank or claſs higher and more perfect than that of men; and eſpecially to thoſe who were inferior agents in the divine adminiſtration, all ſubject to the one Supreme. Thus men themſelves, according to their ſyſtem, might become gods after death; inaſmuch as their ſouls might attain to a degree of excellence ſuperior to what they were capable of in life.

The firſt divines, father Boſſu obſerves, were the poets: the two functions, though now ſeparated, were originally combined; or, rather, were one and the ſame thing.

Now the great variety of attributes in God, that is, the number of relations, capacities, and circumſtances, wherein they had occaſion to conſider him, put theſe poets, &c. under a neceſſity of making a partition, and of ſeparating the divine attributes into ſeveral perſons; becauſe the weakneſs of the human mind could not conceive ſo much power and action in the ſimplicity of one ſingle divine nature. Thus the omnipotence of God came to be repreſented under the perſon and appellation of Jupiter; the wiſdom of God, under that of Minerva; the juſtice of God under that of Juno.

The firſt idols or falſe gods that are ſaid to have been adored, were the ſtars, ſun, moon, &c. on account of the light, heat, and other benefits, which we derive from them. Afterwards the earth came to be deified, for furniſhing fruits neceſſary for the ſubſiſtence of men and animals; then fire and water became objects of divine worſhip, for their uſefulneſs to human life. In proceſs of time, and by degrees gods became multiplied to infinity; and there was ſcarce any thing but the weakneſs or caprice of ſome devotee or other elevated into the rank of deity; things uſeleſs or even deſtructive not excepted. See Mythology.

GODALMING, a town of England, in the county of Surry, on the river Wey, 35 miles from London. It is a corporation; by whoſe charter their chief magiſtrate is a warden choſen yearly, who has 8 brethren his aſſiſtants. The pariſh is divided into 9 tithings. Its river abounds with good fiſh; and drives a griſt-mill, two paper-mills, and three corn-mills; over which river a new bridge was begun July 22d 1783. Here is a manufactory of mixed and blue kerſeys, alſo a manufactory of ſtockings; and the place is alſo famous for liquorice, and ſtore of peat that burns better than pit-coal: but a woman of this town (Mary Tofts) in 1726 endeavoured to render it infamous, by a pretended delivery of rabbets; by which, however, ſhe for ſome time puzzled ſome noted phyſicians, anatomiſts, &c. In 1739, the ſmall-pox carried off above 500 perſons here in 3 months, which was more than a third of the inhabitants.

GODDARD (Jonathan), an eminent phyſician and chemiſt, and one of the firſt promoters of the Royal Society, was born about the year 1617. He was elected a fellow of the college of phyſicians in 1646, and appointed reader of the anatomical lecture in that college in 1647. As he took part againſt Charles I. accepted the wardenſhip of Merton-college, Oxford, from Oliver Cromwell when chancellor, and ſat ſole repreſentative of that univerſity in Cromwell's parliament, he was removed from his wardenſhip in a manner diſgraceful to him by Charles II. He was however then profeſſor of phyſic at Greſham college, to which he retired, and continued to attend thoſe meetings that gave birth to the Royal Society; upon the firſt eſtabliſhment of which, he was nominated one of the council. Being fully perſuaded that the preparation of medicines was no leſs the phyſician's duty than the preſcribing them, he conſtantly prepared his own; and in 1668 publiſhed a treatiſe recommending his example to general practice. He died of an apoplectic fit in 1674; and his memory was preſerved by the drops that bore his name, otherwiſe called *Guttæ Anglicanæ*, the ſecret of which he ſold to Charles II. for 5000l. and which Dr Liſter aſſures us was only the volatile ſpirit of raw ſilk rectified with oil of cinnamon or ſome other eſſential oil. But he claims more particular regard, if what biſhop Seth Ward ſays be true, that he was the firſt Engliſhman who made that noble aſtronomical inſtrument, the teleſcope.

GODDESS, a heathen deity of the female ſex.

The ancients had almoſt as many goddeſſes as gods: ſuch were, Juno the goddeſs of air, Diana the goddeſs of woods, &c. and under this character were repreſented the virtues, graces, and principal advantages of life; truth, juſtice, piety, liberty, fortune, victory, &c.

It was the peculiar privilege of the goddeſſes to be repreſented naked on medals; for it was ſuppoſed that the imagination muſt be awed and reſtrained by the conſideration of the divine character.

GODEAU (Anthony), biſhop of Graſſe and Vence in France, was born at Dreux in 1605. He was a very voluminous writer, both in proſe and verſe; but his principal works are, 1. *An eccleſiaſtical hiſtory*, 3 vols. folio, containing the firſt eight centuries only, as he never finiſhed more. 2. *Tranſlation of the Pſalms into French verſe*; which was ſo well approved, that even thoſe of the reformed religion preferred it to that of Marat. He died in 1671.

GODFATHERS and GODMOTHERS, perſons who, at the baptiſm of infants, anſwer for their future conduct, and ſolemnly promiſe that they will renounce the devil and all his works, and follow a life of piety and virtue; and by this means lay themſelves under an indiſpenſable obligation to inſtruct them, and watch over their conduct.

This cuſtom is of great antiquity in the Chriſtian church; and was probably inſtituted to prevent children being brought up in idolatry, in caſe their parents died before they arrived at the years of diſcretion.

The number of godfathers and godmothers is reduced to two, in the church of Rome; and three, in the church of England; but formerly they had as many as they pleaſed.

GODFREY (of Bouillon), prince of Lorrain, a moſt celebrated cruſader, and victorious general. He was choſen general of the expedition which the Chriſtians undertook for the recovery of the Holy Land, and ſold his dukedom to prepare for the war. He took Jeruſalem from the Turks in 1099; but his piety, as hiſtorians relate, would not permit him to wear a diadem of gold in the city where his Saviour had been crowned with thorns. The ſultan of Egypt afterwards ſent a terrible army againſt him; which he defeated, with the ſlaughter of about 100,000 of the enemy. He died in 1160.

GODMANCHESTER, a town of Huntingdonſhire, 16 miles from Cambridge, and 57 from London. It has a bridge on the Ouſe, oppoſite to Huntingdon; was formerly a Roman city, by the name of Duroſiponte, where many Roman coins have been often dug up; and according to old writers, in the time of the Saxons it was the ſee of a biſhop, and had a caſtle built by one Gorman a Daniſh king, from which the town was called Gormancheſter. It is reckoned one of the largeſt villages in England, and is ſeated in a fertile ſoil, abounding with corn. It is ſaid that no town in England kept more ploughs at work than this has done. The inhabitants boaſt they formerly received the kings as they made a progreeſs this way, with nine ſcore ploughs at a time, finely adorned with their trappings, &c. James I. made it a corporation by the name of two bailiffs, 12 aſſiſtants, and the commonalty of the borough of Godmancheſter. Here is a ſchool, called the Free Grammar-School of queen Elizabeth. On the weſt ſide of the town is a noble though ancient ſeat of the Earl of Sandwich. Near this place, in the London road between Huntingdon and Caxton, is a tree well known to travellers by the name of Beggar's-Buſh.

GODOLPHIN (John), an eminent Engliſh civilian, was born in the iſland of Scilly in 1617, and educated at Oxford. In 1642-3, he was created doctor of civil law; in 1653, he was appointed one of the judges of the admiralty; and at the Reſtoration, he was made one of his majeſty's advocates. He was eſteemed as great a maſter of divinity as of his own faculty; and publiſhed, 1. The holy limbeck. 2. The holy arbour. 3. A view of the admiral's juriſdiction. 4. The orphan's legacy. 5. *Repertorium canonicum*, &c. He died in 1678.

GODSTOW, a place northweſt of Oxford, in a ſort of iſland formed by the divided ſtreams of the Iſis after being joined by the Evenlode. It is noted for catching of fiſh and dreſſing them; but more ſo for the ruins of that nunnery which fair Roſamond quitted for the embraces of Henry II. The people ſhow a great hole in the earth here, where they ſay is a ſubterraneous paſſage, which goes under the river to Woodſtock, by which ſhe uſed to paſs and repaſs. Little more remains at preſent than ragged walls, ſcattered over a conſiderable extent of ground. An arched gateway, and another venerable ruin, part of the tower of the conventual church, are ſtill ſtanding. Near the altar in this church fair Roſamond was buried, but the body was afterwards removed by order of a biſhop of

Lincoln, the viſitor. The only entire part is ſmall, formerly a private chapel. Not many years ſince a ſtone coffin, ſaid to have been Roſamond's, who perhaps was removed from the church to this place, was to be ſeen here. The building has been put to various uſes, and at preſent ſerves occaſionally for a ſtable.

GODWIN (Francis), ſucceſſively biſhop of Landaff and Hereford, was born in 1567. He was eminent for his learning and abilities; being a good mathematician, an excellent philoſopher, a pure Latiniſt, and an accurate hiſtorian. He underſtood the true theory of the moon's motion, a century before it was generally known. He firſt ſtarted thoſe hints afterwards purſued by biſhop Wilkins, in his "Secret and ſwift meſſenger;" and publiſhed "A catalogue of the lives of Engliſh biſhops." He has nevertheſs been accuſed as a great ſimoniac, for omitting no opportunity of diſpoſing of preferments in order to provide for his children. He died in 1648.

GODWIN (Thomas); a learned Engliſh writer born in 1517, was maſter of the free-ſchool at Abington in Berkſhire; where he educated a great many youths, who became eminent both in church and ſtate. His works ſhow him to have been a man of great learning: ſuch as, *Hiſtoriæ Romanæ anthologia, Synopſis antiquitatum Hebraicarum, Moſes & Aaron, Florilegium Phraſicon, &c.* He died in 1642.

GODWIN, or *Goodwin Sands*. See *GOODWIN-Sands*.

GODWIT, in ornithology. See SCOLOPAX.

GOES, or TER GOES, a ſtrong and conſiderable town of the United Provinces, in Zealand, and capital of the Iſland of South-Beveland. It communicates with the ſea by a canal, and is 10 miles eaſt of Middleburg, and 30 north of Ghent. E. Long. 3. 50. N. Lat. 51. 33.

GOG and MAGOG, two names generally joined together in ſcripture, (Ezek. xxxviii. 2, 3, &c. xxxix, 1, 2, &c. Rev.. xx. 8.) Moſes ſpeaks of Magog the ſon of Japhet, but ſays nothing of Gog, (Gen. x. 2. 1 Chr. i. 5.) Gog was prince of Magog, according to Ezekiel. Magog ſignifies the country or people, and Gog the king of that country. The generality of the ancients made Magog the father of the Scythians and Tartars; and ſeveral interpreters diſcovered many footſteps of their name in the provinces of Great Tartary. Others have been of opinion that the Perſians were the deſcendants of Magog; and ſome have imagined that the Goths were deſcended from Gog and Magog; and that the wars deſcribed by Ezekiel, and undertaken by Gog againſt the Saints, are no other than thoſe which the Goths carried on in the fifth age againſt the Roman empire.

Bochart has placed Gog in the neighbourhood of Caucaſus. He derives the name of this celebrated mountain from the Hebrew *Gog chaſan*, "the fortreſs of Gog." He maintains that Prometheus, ſaid to be chained to Caucaſus by Jupiter, is Gog, and no other. There is a province in Iberia called the Gogarene.

Laſtly, the generality believe, that Gog and Magog, mentioned in Ezekiel and the Revelations, are to be taken in an allegorical ſenſe, for ſuch princes as were enemies to the church and ſaints. Thus many by Gog in Ezekiel underſtand Antiochus Epiphanes, the perſecutor of thoſe Jews who were firm to their religion; and by the perſon of the ſame name in the Revelations, they ſuppoſe Antichriſt to be meant; the great enemy of the church and faithful. Some have endeavoured to prove that Gog, ſpoken of in Ezekiel, and Cambyſes king of Perſia were one and the ſame perſon; and that Gog and Magog in the Revelations denote all the enemies of the church, who ſhould be perſecuters of it to the conſummation of ages.

GOGGLES, in ſurgery, are inſtruments uſed for curing ſquinting, or that diſtortion of the eyes which occaſions this diſorder. They are ſhort conical tubes, compoſed of ivory ſtained black, with a thin plate of the ſame ivory fixed in the tubes near their anterior extremities. Through the centre of each of theſe plates is a ſmall circular hole, about the ſize of the pupil of the eye, for the tranſmiſſion of the rays of light. Theſe goggles muſt be continually worn in the daytime, till the muſcles of the eye are brought to act regularly and uniformly, ſo as to direct the pupil ſtraight forwards; and by theſe means the cure will be ſooner or later effected.

GOGMAGOG-HILLS, are hills ſo called, three miles from Cambridge, remarkable for the intrenchments and other works caſt up there: whence ſome ſuppoſe it was a Roman camp; and others, that it was the work of the Danes.

GOGUET (Antony-Yves), a French writer, and author of a celebrated work, intitled, *L'Origine des Loix, des Arts, des Sciences, & de leur Progres chez les anciens Peuples*, 1758, 3 vols. 4to. His father was an advocate, and he was born at Paris in 1716. He was very unpromiſing as to abilities, and reckoned even dull in his early years; but his underſtanding developing itſelf, he applied to letters, and at length produced the above work. The reputation he gained by it was great: but he enjoyed it a very ſhort time; dying the ſame year of the ſmall-pox, which diſorder, it ſeems, he always dreaded. It is remarkable, that Conrad Fugere, to whom he left his library and his MSS. was ſo deeply affected with the death of his friend, as to die himſelf three days after him. The above work has been tranſlated into Engliſh, and publiſhed in 3 vols. 8vo.

GOITO, a town of Italy, in the duchy of Mantua, taken by the Germans in 1701, and by the prince of Heſſe in 1706. It is ſeated on the river Mincio, between the lake of Mantua and that of Garda, 10 miles north-weſt of Mantua. E. Long. 11. 0. N. Lat. 45. 16.

GOLCONDA, a kingdom of Aſia, in the peninſula on this ſide the Ganges. It is bounded on the north by that of Orixa, on the weſt by that of Balagate, on the ſouth by Biſnagar, and on the eaſt by the gulph of Bengal. It abounds in corn, rice, and cattle; but that which renders it moſt remarkable are the diamond-mines, they being the moſt conſiderable in the world: they are uſually purchaſed of the black merchants, who buy parcels of ground to ſearch for theſe precious ſtones in. They ſometimes fail in meeting with any, and in others they find immenſe riches. They have alſo mines of ſalt, fine iron for ſword-blades, and curious callicoes and chintzes. It is ſubject to the Great Mogul; and has a town of the ſame name, ſeated at the foot of a mountain, being one of the largeſt in the Eaſt Indies. It is about ſix miles in circumference; and was formerly the reſidence of the kings, till it was conquered by the Great Mogul. It is now much frequented by the European merchants. E. Long. 70. 10. N. Lat. 16. 30.

GOLD, the moſt valuable of all the metals, is of a bright yellow colour when pure, but becomes more or leſs white in proportion as it is alloyed with other metals. It is the heavieſt of all known bodies platina only excepted; its ſpecific gravity being to that of diſtilled water as 19.640 to 1000. In melts in a low white heat; requiring, according to Mr Wedgewood's calculation, 5237 degrees of Fahrenheit's, or 32 of his own, thermometer for its fuſion; a heat greatly ſuperior to that which melts ſilver or copper; the former requiring only 4717, and the latter 4587 of Fahrenheit. Other metallurgiſts, however, have differed, and aſſert that copper requires for its fuſion a greater degree of heat than either gold or ſilver.

Gold is by far the moſt tough and ductile, as well as the moſt malleable, of all metals. According to Cronſtedt, one grain of it may be ſtretched out ſo as to cover 98 Swediſh ells, equal to 63.66 Engliſh yards of ſilver wire; but Wallerius aſſerts, that a grain of gold may be ſtretched in ſuch a manner as to cover 500 ells of wire. At any rate, the extenſion is prodigious; for, according to the leaſt of theſe calculations, the millionth part of a grain of gold may be made viſible to the naked eye. Nor is its malleability inferior to its ductility. Boyle, quoted by Apligny in his Treatiſe of Colours, ſays, that one grain and an half of gold may be beaten into 50 leaves of one inch ſquare, which, if interſected by parallel lines drawn at right angles to each other, and diſtant only the 100dth part of an inch from each other, will produce 25 millions of little ſquares, each very eaſily diſcernible by the naked eye. Mr Magellan tells us, that its ſurface may be extended by the hammer 159092 times. "I am informed (ſays he) by an intelligent-gold beater in England, that the fineſt gold leaf is that made in new ſkins, and muſt have an alloy of three grains of copper to the ounce troy of pure gold, or elſe it would be too ſoft to paſs over the irregularities of the ſkins. He affirms, that 80 books, or 2000 leaves of gold, each meaſuring 3.3 ſquare inches, viz. each leaf containing 10.89 ſquare inches, weigh leſs than 384 grains. Each book, therefore, or 25 leaves, = 272.23 inches, weighs leſs than 4.8 grains; ſo that each grain of the metal will produce 56.718 ſquare inches." From further calculations it may be made to appear, that the thickneſs of theſe leaves is leſs than $\frac{1}{282020}$th of an inch; and that 16 ounces of gold would be ſufficient to gild a ſilver wire equal in length to the whole circumference of the globe.

Gold is more elaſtic than lead or tin, but leſs ſo than iron, or even copper. It grows hard and brittle by hammering, but reſumes its ductility on being ſlowly heated. Gold leaf exhibits a fine green colour on being interpoſed between the eye and the beams of the ſun or any other luminous body. When expoſed for ſome time to a ſtrong heat, it becomes ignited, and at laſt melts, aſſuming at the ſame time a fine bluiſh-green colour; and, when cold, cryſtallizes into quadrilateral pyramids. This bluiſh green colour, according to Mr Magellan, as well as the former, when a thin film of the metal is interpoſed betwixt the eye and the luminous body, is owing to tranſmitted light. "The green light (ſays he) is tranſmitted in both caſes, ſince all reflected colours are produced by the tranſmiſſion of light, as the ingenious philoſopher Mr Delaval has lately diſcovered and demonſtrated in his very elaborate treatiſe on this ſubject, inſerted in the ſecond volume of the memoirs publiſhed in 1785 by the Philoſophical Society of Mancheſter." Sir Iſaac Newton, in his Optics (page 162, edition of 1730), accounts for that phenomenon, ſaying, that "gold foliated, and held between the eyes and the light, looks of a greeniſh blue; and therefore (ſays he) maſſy gold lets into its body the blue rays to be reflected to and fro within it, till they be ſtopped and ſtifled; while it reflects the yellow outwards, and therefore looks yellow." It is therefore, in the two above caſes, that ſome of the blue rays are tranſmitted along with the yellow ones; and both together appear of a bluiſh-green. If gold be expoſed to the joined rays of light, excepting only the yellow ones, which we ſuppoſe ſtopped after they were ſeparated by a priſm, it only looks white like ſilver; "which ſhows (ſays Sir Iſaac Newton) that its yellowneſs ariſes from the exceſs of intercepted rays tinging that whiteneſs with their colour when they are let to paſs. It is a pleaſing obſervation to look with a deep magnifier on various pieces of gold, ſilver, and Dutch (copper) leaves between the eye and the ſunſhine. The particles of ſilver are ſeen in the form of oblong dark lumps, with ſome interſtices, like net-work, between them: thoſe of the copper leaf are more numerous and more regularly diſtributed; but the particles of the gold-leaf appear like little green ſemitranſparent and ſimilar particles, uniting between themſelves by nearly diaphanous joints, as if they were forced to flatten in their edges, rather than they would break their mutual coheſion with one another."

Gold is more generally found native than any other metal; though Bergman informs us, that he does not know an inſtance of its ever being found perfectly free of alloy. Kirwan ſays it is ſeldom found ſo; being generally alloyed with ſilver, copper, or iron, and ſometimes with all the three. According to Wallerius, native gold is found, 1. In ſolid maſſes, in Hungary, Tranſylvania, and Peru. 2. In grains in the Spaniſh Weſt Indies. 3. In a vegetable form, like the branches or twigs of plants. 4. In a *druſic* figure, as if compoſed of groups or cluſters of ſmall particles united together, found in Hungary. 5. Compoſed of thin plates, or thin pellicles, covering other bodies, found in Siberia. 6. In a cryſtalline form in Hungary.

The ſame author informs us, that gold, in its reguline ſtate, is formed either into angular cryſtals compoſed of yellow octaedrons, or into yellow irregular maſſes, which ſhow a grain-like texture. Brunnich ſays, that the native gold found in leaves is always cryſtallized on the ſurface; and with a magnifier they may be ſeen of a triangular pyramidal form. He informs us alſo, that in Tranſylvania he procured a ſpecimen of cubic native gold, but never ſaw it any where elſe.

Gold is alſo found in the form of thick ſolid pieces. It is in general more frequently imbedded in quartz, and mixed with it, than with any other ſtone; and the quartz in which the gold is found in the Hungarian mines, Mr Magellan tells us, is of a peculiar mild appearance. Sometimes, however, it is found in limeſtone, or in hornblende, &c.

Europe is principally ſupplied with gold from Chili and Peru in South America. A ſmall quantity is likewiſe imported from China and the coaſt of Africa. The principal gold mines of Europe are thoſe of Hungary, and next to them the mines of Saltzburg. The mines of Adelfors in Smaland are likewiſe worked to advantage; and the veins of metal appear to be diffuſed over a great tract of land. Some gold from four to ſeven grains in the mark is alſo ſaid to be extracted from the ſilver of the mines of Oſterſilvarberget in the province of Dalarne. Native gold has alſo been found in Lapland above Tornea, and in Weſtmanland. In Peru it is found mixed with a ſtony matter not well known, from which it is extracted by amalgamation. Mr Pallas mentions three gold mines that are worked there, near the river Pyſchma, in which 500 men are employed. The metal is found in a powdery form, and alſo thin plates or leaves. Sometimes kernels or lumps of a ſpongy texture, and very light, are met with which contain a good quantity of gold duſt. This gold-duſt or waſh-gold is uſually waſhed out of ſands wherein it lies in the form of looſe grains or lumps. It is diſtinguiſhed by the variouſly coloured ſubſtances wherewith it is mixed. The metal is alſo found ſeparate from any matrix in lumps or viſible grains mixed with ſands. Thus it is met with in many rivers of Europe as well as the other quarters of the world. It is alſo viſibly diſperſed through maſſes of ſand, particularly ſuch as is of a yellowiſh-red or violet-colour; and in this ſtate it is ſo univerſally diffuſed through every kind of earth, that Mr Bergman thinks it the moſt common of all the metals, iron alone excepted. If 100 pounds of ſand contain 24 grains of gold, the ſeparation is ſaid to be worth attending to. In Africa 5 pounds of ſand often yield 63 grains of gold, or even more; and the heavieſt ſand, which is often black or red, contains the moſt. In Hungary, however, only 10 or 12 grains of gold are contained in 10,000 pounds of ſand; and even this trifling quantity it has been extracted, though with loſs.

Gold is brought down with moſt of the large rivers; even thoſe which do not take their riſe in mountains where gold is found. In Tranſylvania the river of Avanyos affords ſubſiſtence to upwards of 700 Gipſey families, who collect the gold from it. In Braſil it is found in ſuch abundance, that their torrents are often turned with great labour and expence into new beds, in order to gather the gold there depoſited by the running waters.—It is alſo found there mingled with the earth in various ſhapes and forms.—It is likewiſe ſaid to be ſometimes found in veins running through beds of coals.

Gold is ſaid to be mineralized, when it is mixed with ſome other ſubſtance in ſuch a manner as not to be acted upon by aqua regia. In this manner gold is mineralized.

1. *By Sulphur.* Many have inſiſted, that as gold and ſulphur are not found to have any chemical attraction for one another, it is impoſſible that marcaſite can contain any of the metal, or indeed that it can be found in any ore containing ſulphur: but ſince we know by experience, that gold can be melted out of theſe ores, even after they have been digeſted in aqua regia, and that gold likewiſe enters into their ſulphurated regulus, there is the greateſt reaſon to believe, that ſome third ſubſtance, probably a metal, has by its admixture enabled the ſulphur to unite with a certain quantity of gold. Marcaſites, however, contain, at any rate, only a ſmall quantity of the precious metal; and none is to be expected from them in places where no gold is in the neighbourhood. “I am not perfectly clear (ſays Cronſtedt) whether the gold is really diſſolved and indurated, or, if I may ſo expreſs myſelf, *vitrified* in the *ſchirls*; provided by this mineral body, we mean a garnet ſubſtance. But I have ſeen a piece of what is called *ſhirl*, whoſe texture was exactly like the Schemnitz blende; and in this caſe it might perhaps hold the ſame contents.”

2. *With Sulphur by means of Iron:* Gold pyrites, or marcaſitical gold ore. This is a cloſe and compact ſubſtance of a bright yellow colour. Here the gold is ſaid to be mineralized by ſulphur by means of iron, becauſe it cannot be extracted by aqua regia or by amalgamation. A kind of gold pyrites is found at Adelfors in the province of Smaland, which contains an ounce or leſs of gold in an hundred weight of the ore. The Tranſylvania gold pyrites, according to Brunnich, in which no gold can be perceived by the naked eye, contain from 50 to 100 and 110 ounces and upwards in an hundred weight. Thoſe where the gold appears in the pyrites like ſtrewed Spaniſh ſnuff, hold 250 ounces, but they are very ſcarce. The mountain of Faczebaye, near Zalathna, is remarkable for gold pyrites; and here they ſeem alſo to contain ſemi-metallic parts.

The following is M. Magellan's method of accounting for the union of gold with this kind of pyrites. “It is well known, that gold may be diſſolved by liver of ſulphur. The proceſs given for this purpoſe by M. Apligny, p. 156 of his Treatiſe on Colours, is as follows. Reduce to powder four pounds of vegetable alkali (ſalt of tartar), and as many of ſulphur, with one of leaves of gold. Melt the mixture in a crucible with its cover; pour the fuſed matter out on a marble ſtone; pound it again when cold, and put the whole in a matraſs with hot water; which being filtrated is of a greeniſh yellow colour, containing the gold diſſolved. Now, as we know that *hepar ſulphuris* has been found in ſeveral pyrites, and Maſcagni ſays that he found it in thoſe lagoons near Sienna in Italy; is it not very natural to conclude, that this noble metal may be really mineralized in the auriferous pyrites?”

3. *Auriferous Cinnabar*, in which the metal is mineralized by means of quickſilver, ſaid to be found in Hungary. Mr Sage ſpeaks of a ſpecimen of gold from Hungary, now in the French king's cabinet at Paris, which is cryſtallized into quadrangular priſms of a grey yellowiſh colour and a brittle conſiſtency, which he ſuppoſes to be the reſult of a mercurial amalgam of native gold.

5. *The Schemnitz Blende*, in which the gold is mineralized by means of zinc and iron. Cronſtedt informs us, that the ores of zinc at Schemnitz in Hungary contain a great deal of ſilver, and that this ſilver is very rich in gold. Profeſſor Brunnich enumerates the following varieties of this ore. 1. Where the metal

is mineralized by means of a cubic lead-ore, containing ſilver found in the mines of Michaeli and ſome places in Tranſylvania. 2. By a copper pyrites with ſilver. This kind of ore is called *gilf* in Hungary: it has a compact ſurface of a pale yellow colour; but muſt not for that reaſon be confounded with the auriferous pyrites. 3. The Cremnitz-ores in which the metal is mineralized by means of red gilder-ore. 4. By means of antimony, in which it ſometimes appears. This kind is found at the foot of the Carpathian mountains. 5. By cubic lead-ore, iron, and ſome unknown volatile parts. This ore, as deſcribed by Scopoli, is of a black colour; the richeſt pieces are lamellated almoſt like an iron-glimmer, with a degree of flexibility. The vein is quartz, which is ſometimes looſe, and the metal ſcattered very minutely in it. It is found in Tranſylvania. 6. Native gold, with black-lead (or molybdæna), has been found near Rimezembat in Upper Hungary; but our author (Profeſſor Brunnich) has not had any opportunity of examining whether it is mineralized by it or not. In all the above ſpecies, the gold is either entirely native, but ſo minutely divided, and ſo looſely ſcattered, that it can only be ſeen through microſcopes, and often cannot be ſeen at all before it is ſeparated by various proceſſes: or it may not be in the form of native gold, but the metal as it were in embryo; in which caſe fire is neceſſary to bring the conſtituent parts together, and to add thoſe that are wanting; in that caſe likewiſe it is never without ſilver.

"To theſe (ſays Mr Magellan) may be added the following ores. 1. Gold, with arſenical pyrites, is found alſo at Saltzberg in Tyrol, in mountains of quartz and ſchiſtus. It contains only 25 grains in the quintal; nevertheleſs it affords a profit of L.500 per annum. 2. With a white, red, or vitreous ſilver-ore, near Cremnitz and Schemnitz in Hungary. 3. With a ſulphurated ore of ſilver, iron, lead, and manganeſe, at Nagaya in Tranſylvania. Its ſpecific gravity is 4.043, and it is ſaid to afford 10 ounces per quintal. 4. With ſulphurated iron, copper, and manganeſe, at Nagaya."

The ſtrongeſt heat of any furnace does not change the metallic properties of gold. Kunckel and Boyle made the experiment by expoſing gold for ſeveral months to the fire of a glaſs-houſe. It appears, however, that, by the violent heat of the ſun-beams collected in the focus of a burning-glaſs, ſome alteration may be produced in it. Homberg obſerved that gold, when expoſed to the lens of Tſchirhauſen, formed, was volatilized, and even vitrified: and Macquer found, that the metal, when expoſed to the lens of Mr Trudaine, exhaled a fume which gilded ſilver, and was therefore gold in a volatile ſtate: the globule of melted gold was agitated with a rapid circular motion, and became covered with a dull and as it were calciform pellicle; and laſtly, that a violet vitrification was formed on the middle of the globule. This vitrification gradually extended, and produced a kind of button, flatter, or of a larger curvature, than that of the globule, and which ſtuck upon it as the tranſparent cornea appears on the ſclerotica of the eye. This glaſs increaſed in ſize, while the gold itſelf continually diminiſhed: the ſupport always appeared tinged with a purple colour, ſeemingly produced by the abſorption of part of the glaſs. Time did not permit him to vitrify a quantity of gold entirely. He obſerves, that it is a neceſſary condition that the violet glaſs ſhould be reduced with combuſtible matters, in order to juſtify the aſſertion that it is the calx of that perfect metal, which would evidently appear to be the caſe if it became revived into gold. But however this may be, Mr Fourcroy is of opinion that this ought to be conſidered as a true vitrified calx of gold; and this with the greater probability, as in many operations with this metal the purple colour is conſtantly produced, and many preparations of gold are employed to give that colour to enamel and porcelain. "Gold (ſays he) is therefore calcinable like the other metals; and only requires, as likewiſe does ſilver, a ſtronger heat, and a longer time to unite with the baſe of air than other metallic ſubſtances." Mr Kirwan, on the other hand, tell us, that "gold expoſed to the utmoſt heat of Mr. Parker's lens for ſome hours, loſt no ſenſible part of its weight; yet, when in contact with earthy matters, it communicated a blue or purpliſh tinge to them; ſo that he believes an exceeding ſmall portion of it might be dephlogiſticated."

This experiment with the lens of Mr Parker does not invalidate that of Macquer: for either Trudaine's lens may be more powerful than Mr Parker's; or the air in France being more clear than in England, the action of the ſun muſt be ſtronger. We are aſſured, however, that by means of the electric fire gold may be inſtantaneouſly calcined and even vitrified: whence we muſt conclude, not only that gold is really calcinable, but that the electric fire is almoſt infinitely more powerful than any other; as by its means we may in a moment accompliſh what either cannot be done otherwiſe at all, or very imperfectly, even by the fierceſt fire we can raiſe. The flame of a lamp blown by dephlogiſticated air is alſo found ſufficient to volatilize gold.

Gold being thus indeſtructible by the common operations of fire, equally reſiſts its ſlow action in the atmoſphere. It is altogether exempted from ruſting; and though its ſurface becomes tarniſhed by expoſure to the air, it is merely in conſequence of the depoſition of foreign bodies upon it. Water produces no change, ſays Mr Fourcroy; though, according to the experiments of Lagaraye, it ſeems capable of dividing it nearly in the ſame manner as it does iron.

Gold combines with various metals; and is commonly alloyed in a certain proportion with copper, which gives it a red colour and greater firmneſs than it poſſeſſes when very pure, at the ſame time that it is thus rendered more fuſible. In this ſtate it is uſed for money, plate, and toys of different kinds. It is ſometimes alſo alloyed with ſilver, which deprives it of its colour, and renders it very pale: this alloy, however, is not made without ſome difficulty, on account of the very different ſpecific gravities of the two metals, as Homberg obſerved, who ſaw them ſeparate during their fuſion. The alloy of gold with ſilver forms the green gold of the jewellers and gold-beaters.

As gold has been rendered, by the univerſal conſent of mankind, the moſt valuable ſubſtance in the world, it is of great conſequence to be able to diſcover its degree of purity, in order to prevent the adulterations which would naturally be practiſed, and to produce an equality of value in the different pieces diſperſed in commerce. The chemical methods by which this is accompliſhed, are related under the articles CHEMISTRY, and ESSAYING *of Metals*. To aſcertain with preciſion the quantity of imperfect metal it may contain, a given maſs of gold is ſuppoſed to contain 24 parts called *carats*; each carat being ſuppoſed divided into 32 parts called *thirty-ſeconds of a carat*. If the gold after the operation has loſt one grain in 24, it is gold of 23 carats; if it has loſt a grain and a half, it is gold of 22 carats 16 thirty-ſeconds, and ſo on. The weight uſed in the eſſay of gold is called the *eſſay weight*, and uſually conſiſts of 24 grains; it is divided into 24 carats, which are likewiſe ſubdivided into 32 parts. An eſſay weight is likewiſe uſed which weighs 12 grains; and is likewiſe divided into 24 carats, ſubdivided again into thirty-ſeconds.

The ſcarcity and great price of gold prevent its being made into veſſels or utenſils; but as its brilliancy and colour are agreeable, methods have been found of applying it to the ſurface of a great number of bodies, which it thus not only beautifies, but by its indeſtructibility preſerves from the injuries of the atmoſphere. The art of applying it in this manner is called *gilding*; and the immenſe ductility of gold already mentioned, renders it capable of being applied in this manner at much leſs expence than could be imagined. It is uſed beſides in gilding, either in a ſtate of ſolution by acids, or amalgamated with mercury, which are called *water-gilding*. It was formerly uſed in medicine, and great virtues were aſcribed to it; whence the great number of golden tinctures, elixirs, &c. of quacks; but all theſe are now deſervedly exploded, and the beſt practitioners allow that gold, in whatſoever manner it be prepared, is either inactive or dangerous.

Gold in its metallic ſtate cannot be combined with the vitrifiable earths, but its calces may; for which reaſon they are often uſed in enamel-painting and in porcelain, where they produce a beautiful violet-colour. Glaſs is tinged by them of a beautiful red; of which we have an account in Neri's art of glaſs-making; though Dr Lewis ſays he never could ſucceed in making the colour diffuſe itſelf equally throughout the ſubſtance of the glaſs. See *Colouring of* GLASS.

The preparation of gold called *aurum fulminans* is taken notice of under the article CHEMISTY, nº 1103, M. Magellan takes notice of its extraordinary fulminating property, and ſays that its *fragor* is 64 times greater than that of an equal quantity of gun-powder. According to Bergman, the ſtrength of the exploſion is 176 times greater than that of gun-powder (20 grains of aurum fulminans being equivalent to half a pound of gun-powder). Bergman accounts for the amazing ſtrength of this exploſion, by ſuppoſing it owing to the quantity of air extricated at the time; but this, according to his own account, cannot be at all ſufficient for ſuch a purpoſe; and Magellan is of opinion that "this wonderful phenomenon ſeems not yet completely accounted for by any hypotheſis yet known." See the articles CHEMISTRY, and EXPLOSION.

"It is on account of the ſingular and excellent natural qualities of this metal (ſays our author), which are conſiderably heightened by its ſcarcity, that gold is ſo much valued among all the civilized nations of the world." Mr Pauction, in his *Metrologie*, p. 94. ſays, that one cubic foot (French meaſure) of gold is worth 2,153,000 *livres tournoiſes*, or 89,708 guineas and ſeven ſhillings, ſuppoſing the *Lous d'Or* to be equal to the guinea; and that the reſpective value of the ſame cubic foot of gold is equal to 25.6 cubic feet of ſilver; each of this laſt metal being reckoned worth about 84,000 French livres, or 3503 guineas and eight ſhillings: ſo that if we ſuppoſe the monied ſpecie in France to be but two *milliards* of French livres, according to the eſtimation of Mr Neckar in his Treatiſe upon the Commerce of Corn, the whole amount ſhould make but a ſolid cube of gold leſs than 10 feet on each ſide. So trifling is the phyſical object that excites the activity of 22 millions of the human ſpecies, the number that is ſaid to be that of the inhabitants of France.

We ſhall cloſe this article with ſome obſervations by M. Magellan on the ſtate in which gold is found in the bowels of the earth, and conſequently of the origin of gold ores. "As to the natural exiſtence of gold in the bowels of the earth (ſays he), there have been two opinions among mineralogiſts; ſome pretending that it is only found in its *metallic* or *native* form; and others, that it is ſometimes found *mineralized* in an intimate union with other ſubſtances. M. Kirwan holds the former, and the celebrated Bergman the latter. But, ſays Mr Kirwan, 'though Mr Bergman inclines to the opinion of the mineralization, yet he is candid enough to own, that the gold, when extracted from this ore, is of a granular or angular form. It is therefore very doubtful, whether it was not rather *mixed*, than truly combined with the ſulphur and iron: and its proportion being exceedingly ſmall ſo that 100 pounds of the pyrites ſcarcely contain an ounce of gold, it is not a wonder that it ſhould eſcape the action of aqua regia; more eſpecially as the nitrous acid becomes ſo phlogiſticated by acting on the pyrites, as not to be able to dephlogiſticate the marine. Likewiſe mercury, by reaſon of the gold particles being enveloped in the ſulphureous iron, can have no acceſs to it.'

"Theſe arguments (ſays M. Magellan) againſt the true mineralization of gold, are fully anſwered by the facts already mentioned. Beſides, it is well known, that gold can be combined and calcined, *via ſicca*, by the liver of ſulphur and ſemimetals. This being acknowledged on both ſides of the queſtion, why ſhould we inſiſt on denying this mineralization, when it is out of doubt, among mineralogiſts of rank, that volcanic fires have had a great ſhare in the convulſions and revolutions of this globe, of which every one has the moſt convincing proofs almoſt every where. The account given by Mr Hacquet of the gold mines at Nagy-ag in Tranſylvania, the ancient Dacia, which lies about 45° latitude, offers the moſt convincing proofs of this aſſertion. The country all round theſe mines bears an inconteſtible appearance of being a volcanic one; and among various other metals, there are at leaſt 13 kinds of gold ores, moſt of them mineralized. Theſe are, 1. Gold mineralized by ſulphur, zinc, and arſenic, in a grey-yellowiſh volcanic ore, which is called *cottoners*, or cotton-ore, on account of its lightneſs and texture. 2. By iron and arſenic, formed by ſtrata; one containing black ſilver ore, then ſpatum, galena, quartz, and grey gold ore: it yields about half an ounce in the 100 pounds. 3. By ſulphur, antimony, zinc, ſome arſenic, and ſometimes iron: this is a grey gold ore mixed with ſome quartz. 4. In the form of crooked threads mixed with quartz and gypſeous ſpath; a poor mine. 5. Dendritiform, like the mocho ſtone, or the agate from Aberſtein in the Palatinate; but theſe black dendrites are in a reddiſh ſtone. 6. Amorphous, very compact, in ſmall grains, with ſpath and quartz. A quintal of it yields two ounces of gold, and more of ſilver. 7. By ſulphur, great part of zinc, and a little antimony and arſenic; not rich. 8. Of a black or dark-reddiſh colour, containing an auriferous pyrites; not rich. 9. Of a bluiſh colour, mineralized by ſulphur, antimony, iron, and a little arſenic mixed with ſilver; very rich in gold. 10. Partly laminated with needles of a blackiſh yellow colour: this gives 66 ounces of gold per $\frac{0}{0}$ of gold, according to Scopoli. 11. Foliated with gypſeous ſpath and yellow pyrites. 12. In irregular lamina, on a greyiſh argille. The gold looks like ſilver, and is ſurrounded by ſpars of a pale roſy colour. 13. In cryſtallized laminæ from two to four lines diameter, of an hexangular form, and very much reſembling *molybdæna*. The vein was loſt for ſome time, but lately found again on mining for letting out water from the main. This ore is very rare, and has given 372 ounces per $\frac{0}{0}$ of a mixed metal; five of which were gold, and one ſilver.

Method of Recovering GOLD *from Gilt Works.* The ſolubility of gold, and the indiſſolubility of ſilver, in aqua regia, affords a principle on which gold may be ſeparated from the ſurface of ſilver; and, on this foundation, different proceſſes have been contrived, of which the two following appear to be the beſt. Some powdered ſal ammoniac, moiſtened with aquafortis into the conſiſtence of a paſte, is ſpread upon the gilt ſilver, and the piece heated till the matter ſmokes and becomes nearly dry: being then thrown into water, it is rubbed with a ſcratch bruſh compoſed of fine braſs-wire bound together, by which the gold eaſily comes off. The other way is, by putting the gilt ſilver into common aqua regia, kept ſo hot as nearly to boil, and turning the metal frequently till it becomes all over black: it is then to be waſhed with a little water, and rubbed with the ſcratch bruſh, to get off what gold the aqua regia may have left. This laſt method appears preferable to the other; as the ſame aqua regia may be made to ſerve repeatedly till it becomes ſaturated with the gold, after which the gold may be recovered pure by precipitation with ſolution of vitriol, as directed under the article METALLURGY.

For ſeparating gold from gilt copper, ſome direct a ſolution of borax to be applied on the gilt parts, but nowhere elſe, with a pencil, and a little powdered ſulphur to be ſprinkled on the places thus moiſtened; the principal uſe of the ſolution of borax ſeems to be to make the ſulphur adhere; the piece being then made red hot, and quenched in water, the gold is ſaid to be ſo far looſened, as to be wiped off with a bruſh. Others mix the ſulphur with nitre and tartar, and form the mixture with vinegar into a paſte, which is ſpread upon the gilt parts.

Schlutter recommends mechanical means, as being generally the leaſt expenſive, for ſeparating gold from the ſurface both of ſilver and copper. If the gilt veſſel is round, the gold is conveniently got off by turning it in a lathe, and applying a proper tool, a ſkin being placed underneath for receiving the ſhavings: he ſays it is eaſy to collect into two ounces of ſhavings all the gold of a gilt veſſel weighing thrice as many pounds. Where the figure of the piece does not admit of this method, it is to be properly fixed, and ſcrapers applied of different kinds according to its ſize and figure; ſome large, and furniſhed with two handles, one at each end; others ſmall and narrow, for penetrating into depreſſed parts. If the gold cannot be got off by either of theſe ways, the file muſt be had recourſe to, which takes off more of the metal underneath than the turning tool or the ſcraper, particularly than the former. The gold ſcrapings or filings may be purified from the ſilver or copper they contain, by the methods deſcribed under the article METALLURGY.

The editors of the *Encyclopèdie* give a method of recovering the gold from wood that has been gilt on a water-ſize: this account is extracted from a memoir on the ſame ſubject, preſented to the Academy of Sciences by M. de Montamy. The gilt wood is ſteeped for a quarter of an hour in a quantity of water ſufficient to cover it, made very hot: the ſize being thus ſoftened, the wood is taken out, and ſcrubbed, piece by piece, in a little warm water, with ſhort ſtiff briſtle bruſhes of different ſizes, ſome ſmall for penetrating into the carvings, and others large for the greater diſpatch in flat pieces. The whole mixture of water, ſize, gold, &c. is to be boiled to dryneſs, the dry matter made red hot in a crucible to burn off the ſize, and the remainder ground with mercury, either in a mortar, or, where the quantity is large, in a mill.

GOLD-*Coaſt*. See GUINEA.

GOLD-*Wire*, a cylindrical ingot of ſilver, ſuperficially gilt or covered with gold at the fire, and afterwards drawn ſucceſſively through a great number of little round holes, of a wire-drawing iron, each leſs than the other, till it be ſometimes no bigger than a hair of the head. See *WIRE-Drawing*.

It may be obſerved that, before the wire be reduced to this exceſſive fineneſs, it is drawn through above 140 different holes; and that each time they draw it, it is rubbed afreſh over with new wax, both to facilitate its paſſage, and to prevent the ſilver's appearing through it.

GOLD-*Wire flatted*, is the former wire flatted between two rollers of poliſhed ſteel, to fit it to be ſpun on a ſtick, or to be uſed flat, as it is, without ſpinning, in certain ſtuffs, laces, embroideries, &c. See STUFF, &c.

GOLD-*Thread*, or *Spun-gold*, is flatted gold, wrapped or laid over a thread of ſilk, by twiſting it with wheel and iron-bobbins.

To diſpoſe the wire to be ſpun on ſilk, they paſs it between two rollers of a little mill: theſe rollers are of nicely poliſhed ſteel, and about three inches in diameter. They are ſet very cloſe to each other, and turned by means of a handle faſtened to one of them, which gives motion to the other. The gold wire in paſſing between the two is rendered quite flat, but without loſing any thing of its gilding; and is rendered ſo exceedingly thin and flexible, that it is eaſily ſpun on ſilk-thread, by means of a hand-wheel, and ſo wound on a ſpool or bobbin. See *WIRE-Drawing*.

Gold-Leaf, or *Beaten Gold*, is gold beaten with a hammer into exceeding thin leaves, ſo that it is computed, that an an ounce may be beaten into 1600 leaves, each three inches ſquare, in which ſtate it takes up more than 159,052 times its former ſurface. See *Gold-Leaf*.

It muſt be obſerved, however, that gold is beaten more or leſs, according to the kind or quality of the work it is intended for; that for the gold-wire drawers to gild their ingots withal, is left much thicker than that for gilding the frames of pictures, &c. See Gilding.

Gold-Brocade. See Brocade.

Fulminating-Gold. See Chemistry, nº 1103.

Moſaic-Gold, is gold applied in pannels on a proper ground, diſtributed into ſquares, lozenges, and other compartments; part of which is ſhadowed to raiſe or heighten the reſt. See Mosaic.

Gold Plates for Enamelling are generally made of ducat gold, whoſe fineneſs is from 23½ to 23¾ carats; and the fineſt gold is the beſt for this purpoſe, unleſs where ſome parts of the gold are left bare and unpoliſhed, as in watch-caſes, ſnuff-boxes, &c. for which purpoſe a mixture of alloy is neceſſary, and ſilver is preferred to copper, becauſe the latter diſpoſes the plates to tarniſh and turn green. See Enamelling.

Shell-Gold, is that uſed by the gilders and illuminers, and with which gold letters are written. It is made by grinding gold leaves, or gold-beaters fragments, with a little honey, and afterwards ſeparating the honey from the powdered gold by means of water. When the honey is waſhed away, the gold may be put on paper or kept in ſhells; whence its name. When it is uſed, it is diluted with gum-water or ſoap-ſuds. The German gold-powder, prepared from the Dutch gold-leaf in the ſame manner, is generally uſed; and when it is well ſcoured with varniſh, anſwers the end in japanners gilding as well as the genuine.

Gold-Size for burniſhed gilding is prepared of one pound and an half of tobacco-pipe clay, half an ounce of red chalk, a quarter of an ounce of black lead, forty drops of ſweet oil, and three drams of pure tallow: grind the clay, chalk, and black lead, ſeparately, very fine in water; then mix them together, add the oil and tallow, and grind the mixture to a due conſiſtence.

Gold-ſize of japanners may be made by pulverizing gum animi and aſphaltum, of each one ounce; red-lead, litharge of gold, and umbre, of each one ounce and a half, mixing them with a pound of linſeed-oil, and boiling them, obſerving to ſtir them till the whole be incorporated, and appears on growing cold of the conſiſtence of tar: ſtrain the mixture through a flannel, and keep it ſtopped up in a bottle for uſe. When it is uſed, it muſt be ground with as much vermilion as will give it an opake body, and diluted with oil of turpentine, ſo that it may be worked freely with the pencil. A ſimple preparation conſiſts of one pound of linſeed oil and four ounces of gum animi; powder the gum, and mix it gradually with the boiling oil; let it continue to boil till it becomes of the conſiſtence of tar; ſtrain it through a coarſe cloth; keep and uſe it as the other.

Gold-Finch, in ornithology. See Fringilla.

Theſe are ſeed-birds of very curious colours, and which, were they not ſo common, would probably be very much eſteemed. They are uſually taken about Michaelmas, and ſoon become tame; but they differ very much in their ſong.—They frequently breed in the upper part of plum-trees, making their neſts of the moſs that grows upon apple-trees, and of wool; quilting the inſide will all ſorts of hairs they find upon the ground. They breed three times a-year; and the young are to be taken with the neſt at about ten days old, and fed as follows:—Pound ſome hemp-ſeed very fine in a mortar; then ſift it through a ſieve, and add to it as much wheat-bread as hemp-ſeed; and likewiſe a little flour of canary-ſeeds: then with a ſmall ſtick or quill take up as much as the bigneſs of a white-pea, and give them ſeveral times a-day. This ought to be made freſh every day: for if it is ſuffered to ſour, it will ſpoil their ſtomachs, cauſing them to caſt up their meat; which if they do, it is very probable that they will die.—Theſe young birds muſt be carefully kept warm till they can feed themſelves, for they are very tender. In feeding, be ſure to make your bird clean his bill and mouth. If any of the meat falls upon his feathers, take it off, or elſe he will not thrive. Such as eat hemp-ſeed, to purge them, ſhould have the ſeeds of melons, ſuccory, and mercury; or elſe let them have lettuce and plantane for that purpoſe. When there is no need of purging, give them two or three times a-week a little ſugar or loam in their meat, or at the bottom of the cage; for all ſeeds have an oilineſs, ſo that if they have not ſomething to abſorb it, in length of time it fouls their ſtomachs, and brings on them a flux, which is very dangerous.

Gold-Fiſh. See Cyprinus.

GOLDEN, ſomething that has a relation to gold, or conſiſts of gold.

Golden-Calf, was a figure of a calf, which the Iſraelites caſt in that metal, and ſet up in the wilderneſs to worſhip during Moſes's abſence into the mount; and which that legiſlator at his return burnt, grinded to powder, and mixed with the water the people were to drink of; as related in Exod. xxxii. The commentators have been divided on this article: the pulverizing of gold, and rendering it potable, is a very difficult operation in chemiſtry. Many therefore, ſuppoſe it done by a miracle: and the reſt, who allow of nothing ſupernatural in it, advance nothing but conjectures as to the manner of the proceſs. Moſes could not have done it by ſimple calcination, nor amalgamation, nor antimony, nor calcination; nor is there one of thoſe operations that quadrates with the text.

M. Stahl has endeavoured to remove this difficulty. The method Moſes made uſe of, according to this author, was by diſſolving the metal with hepar ſulphuris; only, inſtead of the vegetable alkali, he made uſe of the Egyptian natron, which is common enough throughout the eaſt. See Chemistry, nº 1127.

Golden-Fleece, in the ancient mythology, was the ſkin or fleece of the ram upon which Phryxus and Hella are ſuppoſed to have ſwam over the ſea to Colchis; and which being ſacrificed to Jupiter, was hung upon a tree in the grove of Mars, guarded by two brazen hoof'd bulls, and a monſtrous dragon that never ſlept; but was taken and carried off by Jaſon and the Argonauts.

Many authors have endeavoured to ſhow that this fable is an allegorical repreſentation of ſome real hiſtory,

tory, particularly of the philoſopher's ſtone. Others have explained it by the profit of the wool-trade to Colchis, or the gold which they commonly gathered there with fleeces in the rivers. See ARGONAUTS.

Order of the GOLDEN *Fleece*, is a military order inſtituted by Philip the Good, duke of Burgundy, in 1429. It took its denomination from a repreſentation of the golden fleece, borne by the knights on their collars, which conſiſted of flints and ſteels. The king of Spain is now grand maſter of the order, in quality of duke of Burgundy: the number of knights is fixed to thirty-one.

It is uſually ſaid to have been inſtituted on occaſion of an immenſe profit which that prince made by wool; though others will have a chemical myſtery couched under it, as under that famous one of the ancients, which the adepts contend to be no other than the ſecret of the elixir, wrote on the fleece of a ſheep.

Oliver de la Marche writes, that he had ſuggeſted to Philip I. archduke of Auſtria, that the order was inſtituted by his grandfather Philip the Good duke of Burgundy, with a view to that of Jaſon; and that John Germain biſhop of Chalons, chancellor of the order, upon this occaſion made him change his opinion, and aſſured the young prince that the order had been inſtituted with a view to the fleece of Gideon. William biſhop of Tournay, chancellor likewiſe of the order, pretends that the duke of Burgundy had in view both the golden fleece of Jaſon and Jacob's fleece, *i. e.* the ſpeckled ſheep belonging to this patriarch, according to agreement made with his father-in-law Laban. Which ſentiment gave birth to a great work of this prelate, in two parts: in the firſt, under the ſymbol of the fleece of Jaſon, is repreſented the virtue of magnanimity, which a knight ought to poſſeſs; and under the ſymbol of the fleece of Jacob he repreſents the virtue of juſtice.

Paradin is of the ſame mind; and tells us, that the duke deſigned to inſinuate that the fabulous conqueſt which Jaſon is ſaid to have made of the golden fleece in Colchis, was nothing elſe but the conqueſt of virtue, which gains a victory over thoſe horrible monſters vice and our evil inclinations.

GOLDEN *Number*, in chronology, a number ſhowing what year of the moon's cycle any given year is. See CHRONOLOGY, n° 27—30.

GOLDEN *Rod*, in botany. See SOLIDAGO.

GOLDEN *Roſe*. The pope annually conſecrates a golden roſe on the fourth Sunday in Lent, which is ſent to princeſſes, or to ſome church, as a mark of his peculiar affection.

GOLDEN *Rule*, in arithmetic, a rule or praxis, of great uſe and extent in the art of numbers; whereby we find a fourth proportional to three quantities given.

The golden rule is alſo called the *Rule of Three* and *Rule of Proportion*. See its nature and uſe under the article of ARITHMETIC, n° 13.

GOLDENGEN, a town of Poland in the duchy of Courland, with a handſome caſtle, ſeated on the river Weia, in E. Long. 22. 31. N. Lat. 56. 48.

GOLDSMITH, or, as ſome chooſe to expreſs it, *ſilverſmith*, an artiſt who makes veſſels, utenſils, and ornaments, in gold and ſilver.

The goldſmith's work is either performed in the mould, or beat out with the hammer or other engine. All works that have raiſed figures are caſt in a mould, and afterwards poliſhed and finiſhed: plates or diſhes, of ſilver or gold, are beat out from thin flat plates; and tankards, and other veſſels of that kind, are formed of plates ſoldered together, and their mouldings are beat, not caſt. The buſineſs of the goldſmiths formerly required much more labour than it does at preſent; for they were obliged to hammer the metal from the ingot to the thinneſs they wanted: but there are now invented flatting-mills, which reduce metals to the thinneſs that is required, at a very ſmall expence. The goldſmith is to make his own moulds; and for that reaſon ought to be a good deſigner, and have a taſte in ſculpture: he ought alſo to know enough of metallurgy to be able to aſſay mixed metals, and to mix the alloy.

The goldſmiths in London employ ſeveral hands under them for the various articles of their trade: ſuch are the jeweller, the ſnuff-box and toy maker, the ſilver-turner, the gilder, the burniſher, the chaſer, the refiner, and the gold-beater.

Goldſmiths are ſuperior tradeſmen: their wares muſt be aſſayed by the wardens of the company of this name in London, and marked; and gold is to be of a certain touch. No goldſmith may take above one ſhilling the ounce of gold, beſides what he has for the faſhioning, more than the buyer may be allowed for it at the king's exchange; and here any falſe metal ſhall be ſeized and forfeited to the king. The cities of York, Exeter, Briſtol, &c. are places appointed for the aſſaying wrought-plate of goldſmiths; alſo a duty is granted on ſilver-plate of ſixpence an ounce, &c. Plate made by goldſmiths ſhall be of a particular fineneſs, on pain of forfeiting 10l.; and if any parcel of plate ſent to the aſſayers is diſcovered to be of a coarſer alloy than the reſpective ſtandards, it may be broken and defaced; and the fees for aſſaying are particularly limited.

GOLDSMITH (Oliver), a celebrated Engliſh writer, was born at Roſcommon in Ireland in the year 1731. His father, who poſſeſſed a ſmall eſtate in that county, had nine ſons, of whom Oliver was the third. He was originally intended for the church; and with that view, after being well inſtructed in the claſſics, was, with his brother the Rev. Henry Goldſmith, placed in Trinity-college, Dublin, about the latter end of the year 1749. In this ſeminary of learning he continued a few years, when he took a bachelor's degree: but his brother not being able to obtain any preferment after he left the college, Oliver, by the advice of Dean Goldſmith of Cork, turned his thoughts to the ſtudy of phyſic; and, after attending ſome courſes of anatomy in Dublin, proceeded to Edinburgh in the year 1751, where he ſtudied the ſeveral branches of medicine under the different profeſſors in that univerſity. His beneficent diſpoſition ſoon involved him in unexpected difficulties; and he was obliged precipitately to leave Scotland, in conſequence of engaging himſelf to pay a conſiderable ſum of money for a fellow-ſtudent.

A few days after, about the beginning of the year 1754, he arrived at Sunderland, near Newcaſtle, where he was arreſted at the ſuit of a taylor in Edinburgh, to whom he had given ſecurity for his friend.

By the good offices of Laughlin Maclane, Eſq; and Dr. Sleigh, who were then in the college, he was ſoon delivered out of the hands of the bailiff; and took his paſſage on board a Dutch ſhip to Rotterdam, where, after a ſhort ſtay, he proceeded to Bruſſels: he then viſited great part of Flanders; and after paſſing ſome time at Straſburg and Louvain, where he obtained a degree of batchelor of phyſic, he accompanied an Engliſh gentleman to Berne and Geneva.

It is undoubtedly fact, that this ingenious unfortunate man travelled on foot moſt part of his tour. He had left England with very little money; and being of a philoſophical turn, and at that time poſſeſſing a body capable of ſuſtaining every fatigue, and a heart not eaſily terrified at danger, he became an enthuſiaſt to the deſign he had formed of ſeeing the manners of different countries. He had ſome knowledge of the French language and of muſic, and he played tolerably well on the German flute; which, from an amuſement, became at ſome times the means of ſubſiſtence. His learning produced him a hoſpitable reception at moſt of the religious houſes; and his muſic made him welcome to the peaſants of Flanders and other parts of Germany. "Whenever I approached," he uſed to ſay, "a peaſant's houſe towards night-fall, I played one of my moſt merry tunes; and that procured me not only a lodging, but ſubſiſtence for the next day: but in truth (his conſtant expreſſion) I muſt own, whenever I attempted to entertain perſons of a higher rank, they always thought my performance odious, and never made me any return for my endeavours to pleaſe them."

On Mr Goldſmith's arrival at Geneva, he was recommended as a proper perſon for a travelling tutor to a young man, who had been unexpectedly left a conſiderable ſum of money by his uncle Mr S——, formerly an eminent pawnbroker near Holborn. This youth, who had been articled to an attorney, on receipt of his fortune determined to ſee the world; and on his engaging with his preceptor, made a proviſo that he ſhould be permitted to govern himſelf; and Goldſmith ſoon found his pupil underſtood the art of directing in money-concerns extremely well, as avarice was his prevailing paſſion. His queſtions were uſually how money might be ſaved, and which was the leaſt expenſive courſe of travel; whether any thing could be bought that would turn to account when diſpoſed of again in London? Such curioſities on the way as could be ſeen for nothing he was ready enough to look at; but if the ſight of them was to be paid for, he uſually aſſerted that he had been told they were not worth ſeeing. He never paid a bill that he would not obſerve how amazingly expenſive travelling was; and all this, though he was not yet twenty-one. During Goldſmith's continuance in Switzerland, he aſſiduouſly cultivated his poetical talent, of which he had given ſome ſtriking proofs while at the college of Edinburgh. It was here he ſent the firſt ſketch of his delightful poem called the *Traveller* to his brother the clergyman in Ireland, who, giving up fame and fortune, had retired with an amiable wife to happineſs and obſcurity, on an income of only 40l. a-year.

From Geneva Mr Goldſmith and his pupil viſited the ſouth of France; where the young man, upon ſome diſagreement with his preceptor, paid him the ſmall part of his ſalary which was due, and embarked at Marſeilles for England. Our wanderer was left once more upon the world at large, and paſſed through a variety of difficulties in traverſing the greateſt part of France. At length his curioſity being ſatiated, he bent his courſe towards England, and arrived at Dover the beginning of the winter 1758. When he came to London, his ſtock of caſh did not amount to two livres. An entire ſtranger in this metropolis, his mind was filled with the moſt gloomy reflections on his embarraſſed ſituation. With ſome difficulty he diſcovered that part of the town in which his old acquaintance Dr Sleigh reſided. This gentleman received him with the warmeſt affection, and liberally invited him to ſhare his purſe till ſome eſtabliſhment could be procured for him. Goldſmith, unwilling to be a burden to his friend, a ſhort time after eagerly embraced an offer which was made him to aſſiſt the late Rev. Dr Milner in inſtructing the young gentlemen at the academy at Peckham; and acquitted himſelf greatly to the Doctor's ſatisfaction for a ſhort time: but having obtained ſome reputation by the criticiſm he had written in the Monthly Review, Mr Griffith, the proprietor, engaged him in the compilation of it; and, reſolving to purſue the profeſſion of writing, he returned to London, as the mart where abilities of every kind were ſure of meeting diſtinction and reward. As his finances were by no means in a good ſtate, he determined to adopt a plan of the ſtricteſt economy; and took lodgings in an obſcure court in the Old Baily, where he wrote ſeveral ingenious little pieces. The late Mr Newberry, who at that time gave great encouragement to men of literary abilities, became a kind of patron to our young author; and introduced him as one of the writers in the Public Ledger, in which his Citizen of the World originally appeared, under the title of *Chineſe Letters*.

Fortune now ſeemed to take ſome notice of a man ſhe had long neglected. The ſimplicity of his character, the integrity of his heart, and the merit of his productions, made his company very acceptable to a number of reſpectable families; and he emerged from his ſhabby apartments in the Old Baily to the politer air of the Temple, where he took handſome chambers, and lived in a genteel ſtyle. The publication of his Traveller, and his Vicar of Wakefield, was followed by the performance of his comedy of the Good-natured Man at Covent-Garden theatre, and placed him in the firſt rank of the poets of the preſent age.

Among many other perſons of diſtinction who were deſirous to know him, was the duke of Northumberland; and the circumſtances that attended his introduction to that nobleman is worthy of being related, in order to ſhow a ſtriking trait of his character. "I was invited," ſaid the Doctor (as he was then univerſally called) "by my friend Mr Piercy, to wait upon the duke, in conſequence of the ſatisfaction he had received from the peruſal of one of my productions. I dreſſed myſelf in the beſt manner I could; and, after ſtudying ſome compliments I thought neceſſary on ſuch an occaſion, proceeded to Northumberland-houſe, and acquainted the ſervants that I had particular buſineſs with his Grace. They ſhowed me into an antichamber; where, after waiting ſome time, a

Goldſmith.

gentleman very genteely dreſſed made his appearance. Taking him for the duke, I delivered all the fine things I had compoſed in order to compliment him on the honour he had done me: when, to my great aſtoniſhment, he told me I had miſtaken him for his maſter, who would ſee me immediately. At that inſtant the duke came into the apartment; and I was ſo confuſed on the occaſion, that I wanted words barely ſufficient to expreſs the ſenſe I entertained of the duke's politeneſs, and went away extremely chagrined at the blunder I had committed."

Another feature of his character we cannot help laying before the reader. Previous to the publication of his Deſerted Village, the bookſeller had given him a note for one hundred guineas for the copy, which the Doctor mentioned a few hours after to one of his friends: who obſerved, it was a very great ſum for ſo ſhort a performance. "In truth," replied Goldſmith, "I think ſo too; I have not been eaſy ſince I received it; therefore I will go back and return him his note:" which he abſolutely did; and left it entirely to the bookſeller to pay him according to the profits produced by the ſale of the piece, which turned out very conſiderable.

During the laſt rehearſal of his comedy intitled She Stoops to Conquer, which Mr Coleman had no opinion would ſucceed, on the Doctor's objecting to the repetition of one of Tony Lumpkin's ſpeeches, being apprehenſive it might injure the play, the manager with great keenneſs replied, "Pſha my dear Doctor, do not be fearful of ſquibs, when we have been ſitting almoſt theſe two hours upon a barrel of gunpowder." The piece, however, contrary to Mr Coleman's expectation, was received with uncommon applauſe by the audience; and Goldſmith's pride was ſo hurt by the ſeverity of the above obſervation, that it entirely put an end to his friendſhip for the gentleman that made it.

Notwithſtanding the great ſucceſs of his pieces, by ſome of which it is aſſerted, upon good authority, he cleared 1800l. in one year, his circumſtances were by no means in a proſperous ſituation; which was partly owing to the liberality of his diſpoſition, and partly to an unfortunate habit he had contracted of gaming; the arts of which he knew very little of, and conſequently became the prey of thoſe who were unprincipled enough to take advantage of his ſimplicity.

Juſt before his death he had formed a deſign for executing an Univerſal Dictionary of Arts and Sciences, the proſpectus of which he actually publiſhed. In this work ſeveral of his literary friends (particularly Sir Joſhua Reynolds, Dr Johnſon, Mr Beauclerc, and Mr Garrick) had undertaken to furniſh him with articles upon different ſubjects. He had entertained the moſt ſanguine expectations from the ſucceſs of it. The undertaking, however, did not meet with that encouragement from the bookſellers which he had imagined it would undoubtedly receive; and he uſed to lament this circumſtance almoſt to the laſt hour of his exiſtence.

He had been for ſome years afflicted, at different times, with a violent ſtrangury, which contributed not a little to embitter the latter part of his life; and which, united with the vexations which he ſuffered upon other occaſions, brought on a kind of habitual deſpondency. In this unhappy condition he was attacked by a nervous fever, which, being improperly treated, terminated in his diſſolution on the 4th of April 1774.

Goldſmith, Golf.

As to his character, it is ſtrongly illuſtrated by Mr Pope's line,

> In wit a man, ſimplicity a child.

The learned leiſure he loved to enjoy was too often interrupted by diſtreſſes which aroſe from the liberality of his temper, and which ſometimes threw him into loud fits of paſſion: but this impetuoſity was corrected upon a moment's reflection; and his ſervants have been known, upon theſe occaſions, purpoſely to throw themſelves in his way, that they might profit by it immediately after; for he who had the good fortune to be reproved, was certain of being rewarded for it. The univerſal eſteem in which his poems were held, and the repeated pleaſure they give in the peruſal, is a ſtriking teſt of their merit. He was a ſtudious and and correct obſerver of nature; happy in the ſelection of his images, in the choice of his ſubjects, and in the harmony of his verſification; and, though his embarraſſed ſituation prevented him from putting the laſt hand to many of his productions, his Hermit, his Traveller, and his Deſerted Village, bid fair to claim a place among the moſt finiſhed pieces in the Engliſh language.

Beſides the works already mentioned, he wrote, 1. Hiſtory of the Earth and Animated Nature, 6 vols 8vo. 2. Hiſtory of England, 4 vols 8vo. 3. Hiſtory of Rome, 2 vols. 4. Abridgements of the two laſt, for the uſe of ſchools. 5. A view of experimental philoſophy, 3 vols 8vo.; a poſthumous work, not eſteemed. 6. Miſcellanies, &c.

GOLF, the name of a certain game among the Scots, and ſaid to be peculiar to their country. Among them it has been very ancient; for there are ſtatutes prohibiting it as early as the year 1457, leſt it ſhould interfere with the ſport of archery. It is commonly played on rugged broken ground, covered with ſhort graſs, in the neighbourhood of the ſea-ſhore. A field of this ſort is in Scotland called *links*. The game is generally played in parties of one or two on each ſide. Each party has an exceeding hard ball, ſomewhat larger than a hen's egg. This they ſtrike with a ſlender and elaſtic club, of about four feet long, crooked in the head, and having lead run into it, to make it heavy. The ball being ſtruck with this club, will fly to the diſtance of 200 yards, and the game is gained by the party who puts his ball into the hole with the feweſt ſtrokes. But the game does not depend ſolely upon the ſtriking of the longeſt ball, but alſo upon meaſuring the ſtrength of the ſtroke, and applying it in ſuch direction as to lay the ball in ſmooth ground, whence it may be eaſily moved at the next ſtroke. To encourage this amuſement, the city of Edinburgh, A.D. 1744, gave to the company of golfers a ſilver club, to be played for annually by the company, the victor to append a gold or ſilver piece to the prize. It has been played for every year ſince, except the years 1746, 1747. For their better accommodation, 22 members of the company ſubſcribed L.30 each in the year 1768, for building a houſe, where their meetings might be held. The ſpot choſen for this purpoſe was the ſouthweſt corner of Leith links, where an area was taken in feu from the magiſtrates of Edinburgh, and a commodious houſe and tavern built upon it.

GOLIUS (James), a celebrated profeſſor of Arabic and the mathematics at Leyden, was deſcended from a very honourable family, and born at the Hague in the year 1596. He was put to the univerſity of Leyden, where he ſtudied under Erpinius; and having made himſelf maſter of all the learned languages, applied himſelf to the mathematics, phyſic, and divinity. He afterwards travelled into Africa and Aſia; and became greatly eſteemed by the king of Morocco, and the ſultan of the Turks. He at length returned to Leyden, loaded with manuſcripts; and in 1624, ſucceeded Erpinius in the Arabic chair. As he had been an eye-witneſs of the wretched ſtate of Chriſtianity in the Mahometan countries, he was filled with the compaſſion of a fellow-chriſtian; and none ever ſolicited for a place of honour and profit with greater eagerneſs, than he for procuring a new edition of the New Teſtament, in the original language, with a tranſlation into the vulgar Greek, by an Archimandrite; and as there are ſome of theſe Chriſtians who uſe the Arabic tongue in divine ſervice, he alſo took care to have diſperſed among them an Arabic tranſlation of the Confeſſion of the Proteſtants, together with the Catechiſm and Liturgy. In 1626, he was alſo choſen profeſſor of mathematics; and diſcharged the functions of both profeſſorſhips with the greateſt applauſe during 40 years. He was likewiſe appointed interpreter in ordinary to the ſtates for the Arabic, Turkiſh, Perſian, and other eaſtern languages, for which he had an annual penſion, and a preſent of a gold chain, with a very beautiful medal, which he wore as a badge of his office. He publiſhed, 1. The life of Tamerlane, written in Arabic. 2. The hiſtory of the Saracens, written by Elmacin. 3. Alferganus's elements of Aſtronomy, with a new verſion, and learned commentaries. 4. An excellent Arabic lexicon. 5. A Perſian Dictionary. He died in 1667.

GOLTZIUS (Henry), a famous engraver and painter, born in 1558, at Mulbreck in the duchy of Juliers. He was taught the art of engraving by Theodore Curenhert; and ſucceeded very wonderfully in it, notwithſtanding the diſadvantage of a lame hand, which was occaſioned by his falling into the fire whilſt young. He was firſt employed by his maſter, and afterwards he worked for Philip Galle. Domeſtic troubles and ill health occaſioned him to travel. He went through Germany into Italy; and paſſed under a feigned name, that his ſtudies might not be interrupted. He viſited Bologna, Florence, Naples, and Venice, conſtantly applying himſelf to drawing from the antique ſtatues, and the works of the great maſters. At Rome he reſided the longeſt; and there he produced ſeveral excellent engravings from Polidoro Raphael, and other eminent painters. On his return to his native country he eſtabliſhed himſelf at Haerlem, where he engraved many of the drawings which he had made during his abode in Italy. He died at Haerlem in 1617, aged 59. He is ſaid to have been forty years old before he began to paint: yet his pictures are ſpoken of with the greateſt commendation; but as he did not produce any great number of them, they are of courſe but rarely to be met with. As an engraver, he deſerves the higheſt commendation. No man ever ſurpaſſed, and few have equalled, him in the command of the graver and freedom of execution. He copied the ſtyle of Albert Durer, Lucas of Leyden, and other old maſters, with aſtoniſhing exactneſs. Sometimes his engravings are neat in the extreme; at other times they are performed in a bold open manner, without the leaſt reſtraint. He alſo engraved ſeveral of his own deſigns on wood, in that manner which is diſtinguiſhed by the application of *chiaro-ſcuro.* Of his prints, which are very numerous, it may here ſuffice to ſpecify two or three of the moſt celebrated: 1. Six large upright plates, known by the name of his *maſter-pieces.* Theſe, it is ſaid, he engraved to convince the public that he was perfectly capable of imitating the ſtyles of Albert Durer, Lucas Van Leyden, and other maſters, whoſe works were then held in higher eſtimation than his own: for he had adopted a new manner, which he purſued becauſe he thought it ſuperior, and not becauſe he was incapable of following the others. It is reported that with one of them, the circumciſion, which he ſmoked to give it the more plauſible air of antiquity, he actually deceived ſome of the moſt capital connoiſſeurs of the day; by one of whom it was bought for an original engraving of Albert Durer. The ſubjects of theſe plates are, The Annunciation of the Virgin; the Meeting of the Virgin with Elizabeth, called the Viſitation; the Nativity of Chriſt; the Circumciſion of Chriſt; the Adoration of the wiſe Men; the holy Family. 2. The Judgment of Midas, a large plate lengthwiſe. 3. The Venetian Ball, a large plate lengthwiſe, from Theodore Bernard. 4. The Boy and Dog, a middling ſized upright plate, from a deſign of his own; an admirable print. 5. The Necromancer, a middling ſized upright oval print, in chiaro-ſcuro. 6. Night in her Chariot, the ſame.

GOLTZIUS (Hubert), a learned German, born at Venlo in the duchy of Gueldres in 1526. His father was a painter, and himſelf was bred to the art under Lambert Lombard: but he did little at painting, or at leaſt his pictures are very ſcarce; for having a peculiar turn to antiquities, he devoted himſelf to the ſtudy of medals. He travelled through Germany, France, and Italy, to make collections, as well as to draw from thence all the lights he could towards clearing up ancient hiſtory: he was the author of ſeveral excellent works, in which he was ſo accurate and nice, that he had them printed at his own houſe, under his own correction, and even engraved the plates and medals with his own hand. His veneration for Roman antiquities was ſo great, that he gave all his children Roman names: and married, for his ſecond wife, the widow of the antiquarian Martinus Smetius; probably more for the ſake of Smetius's medals and inſcriptions, than for her own ſake; and was puniſhed accordingly by her plaguing him all his life, if ſhe did not ſhorten it. He died in 1583.

GOMBAULD (John Ogier de), one of the beſt French poets in the 17th century, and one of the firſt members of the French Academy, was born at St Juſt de Luſſac. He acquired the eſteem of Mary de Medicis, and of the wits of his time. He was a Proteſtant, and died in a very advanced age. He wrote many works in verſe and proſe. His epigrams, and ſome of his ſonnets, are particularly eſteemed.

GOMBROON, by the natives called *Bander Abaſſi*, a city of Perſia, ſituated in N. Lat. 27. 40. E. Long. 55. 30. The name of *Gombroon*, or *Comerong*, Captain Hamilton tells us, it had from the Portugueſe; becauſe it was remarkable for the number of prawns and ſhrimps caught on its coaſts, by them called *comerong*. This city owes its wealth and grandeur to the demolition of Ormus, and the downfal of the Portugueſe empire in the Eaſt Indies. It is now juſtly accounted one of the greateſt marts in the Eaſt, was built by the great ſhah Abas, and from him, as ſome think, obtained the name of *Bander Abaſſi*, which ſignifies the court of Abas. It ſtands on a bay about nine leagues to the northward of the eaſt end of the iſland of Kiſhmiſh, and three leagues from the famous Ormus. The Engliſh began to ſettle here about the year 1631, when, in conſideration of their ſervices againſt the Portugueſe, ſhah Abas granted them half the cuſtoms of that port. This was confirmed by a phirmaund, and duly regarded, till the Engliſh began to neglect the ſervices they had ſtipulated. Whether the company has any emolument from the cuſtoms at preſent, is what we cannot pretend to aſcertain. The town is large, but its ſituation bad; wanting almoſt every thing that contributes to the happineſs and even ſupport of life. Towards the land it is encompaſſed by a ſort of wall; and towards the ſea are ſeveral ſmall forts, with a platform, and a caſtle or citadel, mounted with cannon to ſecure it and the road from the attempts of an enemy by ſea. The houſes in moſt of the ſtreets are ſo out of repair, ſome half down, others in a heap of rubbiſh, that a ſtranger would imagine the town had been ſacked and ravaged by a barbarous people; not a veſtige of the wealth really contained in the place appearing in view. The bazars and ſhops round them are kept, for the moſt part, by Banians, whoſe houſes are generally in good order. Moſt of the houſes are built with earth and lime, but ſome of the beſt with ſtone. Many of them have a ſort of ventilators at top, which contribute greatly to the health of the inhabitants in the hot ſeaſons of the year. The moſt ſickly months here are April, May, September, and October. With fiſh and mutton the inhabitants are well ſupplied. Rice is imported from India; and wheat is ſo plenty, that the poor ſubſiſt chiefly on bread and dates. The country hereabouts abounds in the moſt delicious fruits, as apricots, peaches, pomegranates, pears, mangoes, grapes, quavas, plums, ſweet quinces, and water-melons. The apricots, however, are ſmall, and extremely dangerous if eaten to exceſs.

Thoſe conveniences are more than overbalanced by the ſcarcity of freſh water, with which the inhabitants are ſupplied from Aſſeen, a place ſeven miles diſtant, there not being a ſpring or well in the town. Perſons of condition keep a camel conſtantly employed in bringing freſh and wholeſome water. Captain Hamilton gives it as his opinion, that one cauſe of the unwholeſomeneſs of this city is the reflection of the rays of light from a high mountain to the north of it. He ſays, that when the beams are reflected from this mountain, they almoſt fire the air, and, for two or three months in the year, render the ſituation intolerable. For this reaſon the people of condition retire into the country, to paſs the heats of June, July, and Auguſt. The very ſea, during this ſeaſon, is affected, inſomuch that the ſtench is no leſs diſagreeable than that of putrid carcaſes; and this is increaſed by the quantities of ſhell-fiſh left on the ſhore, from which an exhalation ariſes that tarniſhes gold and ſilver, and is leſs tolerable than the bilge-water of a tight ſhip. At Aſſeen the Engliſh factory have a country-houſe and gardens, to which they retire occaſionally. Here they have whole groves of Seville orange-trees, which though not natural to the country, thrive very well, and are always verdant, bearing ripe and green-fruit, with bloſſoms, all at the ſame time. They have likewiſe tanks and ponds of fine freſh-water, with every thing elſe that can moderate the heat of the climate, and render life agreeable and elegant. About ten miles from Aſſeen is a place called *Minoa*, where are cold and hot natural baths, reckoned infallible in the cure of all ſcrophulous diſorders, rheumatiſms, and other diſeaſes, by bathing.

Gombroon is extremely populous, on account of the commerce carried on by the Dutch and Engliſh factories, as well as the natives. The Engliſh factory is cloſe by the ſea, at ſome diſtance from the Dutch, which is a commodious and fine new building. A great part of the company's profits ariſes from freights. As the natives have not one good ſhip of their own, and are extremely ignorant of navigation, they freight their goods for Surat, and other Indian marts, in Engliſh and Dutch bottoms, at an exorbitant rate. The commodities of the Gombroon market are, fine wines of different kinds, raiſins, almonds, kiſh-miſhes, prunellas, dates, piſtachio-nuts, ginger, ſilks, carpets, leather, tutty, galbanum, ammoniac, aſa-fætida, tragacanth, with other gums, and a variety of ſhop medicines. Theſe are in a great meaſure the produce of Carmania, which they bring to Gombroon in caravans. The Engliſh company had once a ſmall factory in the province of Carmania, chiefly for the ſake of a fine wool produced there, and uſed by the hatters. The ſaid company had once a project of carrying a breed of the Perſian goats to St Helena; but whether it was executed, or what ſucceſs it met with, we cannot ſay. Although the company pay no cuſtoms, yet they uſually make a preſent to the ſhabander, to avoid the trouble he has it in his power to give them. All private traders with the company's paſſes, enjoy the ſame privileges, on paying two *per cent.* to the company, one to the agent, and one to the broker. All private trade, either by European or country ſhips, has long been engroſſed by the company's ſervants.

GOMERA, one of the Canary iſlands lying between Ferro and Teneriffe. It has one good town of the ſame name, with an excellent harbour, where the Spaniſh fleet often take in refreſhments. They have corn ſufficient to ſupply the inhabitants, with one ſugar-work, and great plenty of wine and fruits. It is ſubject to the Spaniards, who conquered it in 1445. W. Long. 17. 10. N. Lat. 28. 0.

GOMORRAH (anc. geog.), one of the cities of the plain or of the vale of Siddim in Judæa, deſtroyed together with Sodom by fire from heaven, an account of the wickedneſs of the people. To determine its particular ſituation at preſent is impoſſible.

GOMOZIA, in botany: A genus of the digynia order, belonging to the tetrandria claſs of plants. The corolla is campanulated, quadrifid above; there is no calyx; the berry bilocular.

GOMPHOSIS, in anatomy, that kind of articulation by which the teeth are fixed in the jaw-bone. See ANATOMY, n° 2.

GOMPHRÆNA, GLOBE AMARANTH, in botany: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 54th order, *Miſcellaneæ*. The calyx is coloured; the exterior one triphyllous, or diphyllous, with two carinated connivent leaflets; the nectarium cylindrical, with ten teeth; the capſule monoſpermous. There are ſeven ſpecies; but only one of them is commonly cultivated in our gardens, viz. the globoſa. It hath an upright ſtalk branching all round, two or three feet high, garniſhed with oval, lanceolate, and oppoſite leaves; and every branch and ſide-ſhoot terminated by a cloſe globular head of flowers, compoſed of numerous, very ſmall ſtarry florets, cloſely covered with dry ſcaly calices placed *imbricatim*, perſiſtent, and beautifully coloured purple, white, red, or ſtriped and variegated. The flowers themſelves are ſo ſmall, and cloſely covered with the ſcaly calices, that they ſcarcely appear. The numerous cloſely placed ſcaly coverings being of a dry, firm, conſiſtence, coloured and glittering, collected into a compact round head, about the ſize of an ordinary cherry, make a fine appearance. They are annual plants, natives of India; and require artificial heat to raiſe and forward them to a proper growth, ſo that they may flower in perfection, and produce ripe ſeed. They flower from June to November; and if the flowers are gathered when at full growth, and placed out of the ſun, they will retain their beauty ſeveral months.

GONAQUA, the name of a nation inhabiting about the Cape, and ſuppoſed by Dr Sparman to be a mixture of Hottentots and Caffres. See HOTTENTOTS.

GONDAR, the capital of Abyſſinia; ſituated, according to Mr Bruce's obſervations, in Lat. 12. 34. 30. and Long. 37 33. 0. E. from Greenwich. It lies upon the top of a hill of conſiderable height, and conſiſts of about 10,000 families in the time of peace. The houſes are chiefly of clay, with roofs thatched in the form of cones. At the weſt end of the town is the king's palace; formerly, as Mr Bruce informs us, a ſtructure of conſiderable conſequence, being a large ſquare building four ſtories high, flanked with ſquare towers, and affording from the top of it a magnificent view of all the country ſouthward to the lake Tzana. It was built in the time of Facilidas, by maſons from India, and by ſuch Abyſſinians as had been inſtructed in architecture by the Jeſuits before their expulſion. Great part of it is now in ruins, having been burnt at different times; but there is ſtill ample lodging in the two loweſt floors, the audience chamber being above 120 feet long. By the ſide of this ſtructure, there have been built by different kings apartments of clay only in the faſhion of their own country. The palace, with all its contiguous buildings, is ſurrounded by a double ſtone wall thirty feet high and a mile and a half in circumference, with battlements upon the outer wall, and a parapet roof between the outer and inner, by which you can go along the whole and look into the ſtreet. The hill on which the town is built riſes in the middle of a deep valley; through which run two rivers: one of which, the Kakha, coming from the Mountain of the Sun, flanks all the ſouth of the town; while the other, called the *Angrab*, falling from the Mountain Waggora, compaſſes it on the north and north-eaſt; and both rivers unite at the bottom of the hill about a quarter of a mile ſouth of the town. Upon the bank oppoſite to Gondar, on the other ſide of the river, is a large town of Mahometans; a great part of whom are employed in taking care of the king's and nobility's equipage both when they take the field and when they return from it. They are formed into a body under proper officers; but never fight on either ſide, being entirely confined to the occupation juſt mentioned, in which by their care and dexterity in pitching and ſtriking the tents, and in leading and conducting the baggage-waggons, they are of great ſervice.—The valley of Gondar is deſcribed as having three outlets; one ſouth, to Dembea, Matſha, and the Agows; another on the north-weſt, towards Sennaar, over the Mountain of the Sun; and the third north, leading to Waggora over the high mountain Lamalman, and ſo on through Tigre to the Red Sea.

GONDI (John Francis Paul), Cardinal de Retz, was the ſon of Philip Emmanuel de Gondi, Count de Joigny, lieutenant-general, &c. and was born in 1613. From a doctor of the Sorbonne, he firſt became coadjutor to his uncle John Francis de Condi, whom he ſucceeded in 1654 as archbiſhop of Paris; and was finally made a cardinal. This extraordinary perſon has drawn his own character in his memoirs with impartiality. He was a man, who from the greateſt degree of debauchery, and ſtill languiſhing under its conſequences, made himſelf adored by the people as a preacher. At the age of 23, he was at the head of a conſpiracy againſt the life of Cardinal Richlieu; he precipitated the parliament into cabals, and the people into ſedition; he was (ſays M. Voltaire) the firſt biſhop who carried on a civil war without the maſk of religion. However, his intrigues and ſchemes turned out ſo ill, that he was obliged to quit France; and he lived the life of a vagrant exile for five or ſix years, till the death of his great enemy Cardinal Mazarin when he returned on certain ſtipulated conditions. After aſſiſting in the conclave at Rome, which choſe Clement IX. he retired from the world, and ended his life like a philoſopher in 1679; which made Voltaire ſay, that in his youth he lived like Catiline, and like Atticus in his old age. He wrote his Memoirs in his retirement: the beſt edition of which is that of Amſterdam, 4 vols 12mo. 1719.

GONDOLA, a flat boat, very long and narrow, chiefly uſed at Venice to row on the canals. The word is Italian, *gondola*. Du Cange derives it from the vulgar Greek κουντελας, "a bark," or "little ſhip;" Lancelot deduces it from γονδυ, a term in Athenæus for a ſort of vaſe.

The middle-ſized gondolas are upwards of thirty feet long and four broad: they always terminate at each end in a very ſharp point, which is raiſed perpendicularly to the full height of a man.

The addreſs of the Venetian gondoliers, in paſſing along their narrow canals, is very remarkable: there are uſually two to each gondola, and they row by puſhing before them. The fore-man reſts his oar on the left ſide of the gondola: the hind man is placed on the ſtern, that he may ſee the head over the tilt or covering of the gondola, and reſts his oar, which is very long, on the right ſide of the gondola.

GONDOLA is alſo the name of a paſſage-boat of ſix or eight oars, uſed in other parts of the coaſt of Italy.

GONORRHÆA, an efflux of white, greeniſh, or differently-coloured, matter from the urethra; moſt commonly owing to venereal infection. See MEDICINE and SURGERY.

GONZAGA (Lucretia), was one of the moſt illuſtrious ladies of the 16th century; and much celebrated for her wit, her learning, and her delicate ſtyle. Hortenſio Lando wrote a beautiful panegyric upon her, and dedicated to her his dialogue of moderating the paſſions. Her beautiful letters have been collected with the greateſt care. We learn from theſe, that her marriage with John Paul Manfrone was unhappy.—She was married to him when ſhe was not 14 years of age, and his conduct afterwards gave her infinite uneaſineſs. He engaged in a conſpiracy againſt the duke of Ferrara; was detected and impriſoned by him; but, though condemned by the judges, not put to death. She did all in her power to obtain his enlargement, but in vain; for he died in priſon, having ſhown ſuch impatience under his misfortunes, as made it imagined he had loſt his ſenſes. She never would liſten afterwards to any propoſals of marriage, though ſeveral were made to her. All that came from her pen was ſo much eſteemed, that a collection was made even of the notes ſhe writ to her ſervants; ſeveral of which are to be met with in the edition of her letters.

GOOD, in general, whatever is apt to encreaſe pleaſure, to diminiſh pain in us; or, which amounts to the ſame, whatever is able to procure or preſerve to us the poſſeſſion of agreeable ſenſations, and remove thoſe of an oppoſite nature.

Moral GOOD denotes the right conduct of the ſeveral ſenſes and paſſions, or their juſt proportion and accommodation to their reſpctive objects and relations. See MORALS.

GOOD *Abearing*, (*bonus geſtus*,) ſignifies an exact carriage or behaviour of a ſubject towards the king and the people, whereunto ſome perſons upon their miſbehaviour are bound: and he that is bound to this, is ſaid to be more ſtrictly bound than to the peace; becauſe where the peace is not broken, the ſurety *de bono geſtu* may be forfeited by the number of a man's company, or by their weapons.

GOOD *Behaviour*, in law, an exact carriage and behaviour to the king and his people.

A juſtice of the peace in Britain may, at the requeſt of another, or where he ſees cauſe, demand ſurety for the good behaviour; and to that end the juſtice may iſſue out his warrant againſt any perſons whatſoever, below the degree of nobility; but when it is a nobleman, complaint is to be made in the court of chancery, or king's bench, where ſuch nobleman may be bound to keep the peace. Infants and feme-coverts, who ought to find ſurety by their friends, may be bound over to their good behaviour; as alſo lunatics, that have ſometimes lucid intervals, and all others who break the peace, or being ſuſpected to do it by affrays, aſſaults, battery, wounding, fighting, quarrelling, threatening, &c. A perſon may be likewiſe bound to his good behaviour for a ſcandalous way of living, keeping bawdy-houſes, gaming-houſes, &c. and ſo may common drunkards, whoremongers, common whores, cheats, libellers, &c. He who demands ſurety for the peace, on any violence offered, muſt take an oath before the juſtice, that he goes in fear of his life, or ſome bodily harm, &c. and that it is not out of malice, but from a regard to his own ſafety.

Jacob's Law Dict.

GOOD-*Breeding*. See GOOD-MANNERS.

GOOD-*Friday*, a faſt of the Chriſtian church, in memory of the ſufferings and death of Jeſus Chriſt. It is obſerved on the Friday in *holy* or *paſſion week*; and it is called, by way of eminence, *good*, becauſe of the bleſſed effects of our Saviour's ſufferings, which were a propitiatory or expiating ſacrifice for the ſins of the world. The commemoration of our Saviour's ſufferings has been kept from the very firſt ages of Chriſtianity, and was always obſerved as a day of the ſtricteſt faſting and humiliation. Among the Saxons it was called *Long Friday*; but for what reaſon, except on account of the long faſtings and offices then uſed, is uncertain. On Good-Friday the pope ſits on a plain form; and, after ſervice is ended, when the cardinals wait on him back to his chamber, they are obliged to keep a deep ſilence, as a teſtimony of their ſorrow. In the night of Good-Friday, the Greeks perform the obſequies of our Saviour round a great crucifix, laid on a bed of ſtate, adorned with flowers; theſe the biſhops diſtribute among the aſſiſtants when the office is ended. The Armenians, on this day, ſet open a holy ſepulchre, in imitation of that of mount Calvary.

GOOD-*Hope*, or *Cape of Good Hope*, a promontory of Africa, where the Dutch have built a good town and fort. It is ſituated in the country of the Hottentots; for an account of whom, and of the country at large, with its firſt diſcovery, ſee the article HOTTENTOTS.

The Cape of Good-Hope has been generally eſteemed the moſt ſoutherly point of Africa, though it is not truly ſo. In *Phillip's Voyage to Botany Bay**, we are told, that the land which projects fartheſt to the ſouth is a point to the eaſt of it, called by the Engliſh *Cape Lagullus*; a name corrupted from the original Portugueſe *das Agulhas*, which, as well as the French appellation *des Aiguilles*, is deſcriptive of its form, and would rightly be tranſlated *Needle Cape*.

On approaching the Cape, a very remarkable eminence may in clear weather be diſcovered at a conſiderable diſtance; and is called the *Table-mountain* from its appearance, as it terminates in a flat horizontal ſurface, from which the face of the rock deſcends almoſt perpendicularly. In the mild or ſummer ſeaſon, which commences in September, and continues till March, the Table Land or Mountain, is ſometimes ſuddenly capped with a white cloud, by ſome called the *ſpreading the of Table-cloth*. When this cloud ſeems to roll down the ſteep face of the mountain, it is a ſure indication of an approaching gale of wind from the ſouth-eaſt; which generally blows with great violence, and ſome-

* p. 38.

ſometimes continues a day or more, but in common is of ſhort duration. On the firſt appearance of this cloud, the ſhips in Table Bay begin to prepare for it, by ſtriking yards and top-maſts, and making every thing as ſnug as poſſible.—A little to the weſtward of the Table Land, divided by a ſmall valley, ſtands on the right hand ſide of Table Bay a round hill, called the *Sugar Loaf*; and by many the *Lion's Head*, as there is a continuance from it contiguous to the ſea, called the *Lion's Rump*; and when you take a general view of the whole, it very much reſembles that animal with his head erect. The Sugar Loaf or Lion's Head, and the Lion's Rump, have each a flag-ſtaff on them, by which the approach of ſhips is made known to the governor, particulariſing their number, nation, and the quarter from which they came. To the eaſtward, ſeparated by a ſmall chaſm from the Table Land, ſtands Charles's Mount, well known by the appellation of the *Devil's Tower*, or *Devil's Head*; and ſo called from the violent guſts of wind ſuppoſed to iſſue from it when it partakes of the cap that covers the Table Land, though theſe guſts are nothing more than a degree of force the wind acquires in coming through the chaſm. When this phenomenon appears in the morning, which is by no means ſo frequent as in the evening, the ſailors have a ſaying, as the Devil's Tower is almoſt contiguous to the Table Land, that the old gentleman is going to breakfaſt; if in the middle of the day, that he is going to dinner; and if in the evening, that the cloth is ſpread for ſupper. Table-mountain ariſes about 3567 feet above the level of the ſea; the Devil's Tower, about 3368; and the Lion's Head, 2764. In the neighbourhood of the latter lies *Conſtantia*, a diſtrict conſiſting of two farms, wherein the famous wines of that name are produced.

The above deſcribed high lands form a kind of amphitheatre about the Table-valley, where the Cape-town ſtands. This is ſituated at the bottom of the middle height, or Table-mountain; and almoſt in the centre of the Table Bay, ſo called from that mountain.—This bay, it is obſerved in *Phillip's Voyage*, "cannot properly be called a port, being by no means a ſtation of ſecurity; it is expoſed to all the violence of the winds which ſet into it from the ſea; and is far from ſufficiently ſecured from thoſe which blow from the land. The guſts which deſcend from the ſummit of Table-mountain are ſufficient to force ſhips from their anchors, and even violently to annoy perſons on the ſhore, by deſtroying any tents or other temporary edifices which may be erected, and raiſing clouds of fine duſt, which produce very troubleſome effects. A gale of this kind, from the ſouth-eaſt, blew for three days ſucceſſively when Captain Cook lay here in his firſt voyage; at which time, he informs us, the Reſolution was the only ſhip in the harbour that had not dragged her anchors. The ſtorms from the ſea are ſtill more formidable: ſo much ſo, that ſhips have frequently been driven by them from their anchorage, and wrecked at the head of the bay. But theſe accidents happen chiefly in the *quaade mouſſon*, or winter months, from May 14, to the ſame day of Auguſt; during which time few ſhips venture to anchor here. The Britiſh fleet arriving later, lay perfectly unmoleſted as long as it was neceſſary for it to remain in this ſtation.—Falſe Bay, on the ſouth-eaſt ſide of the Cape, is more ſecure than Table Bay during the prevalence of the north-weſt winds, but ſtill leſs ſo in ſtrong gales from the ſouth-eaſt. It is, however, leſs frequented, being 24 miles of very heavy road diſtant from Cape Town, whence almoſt all neceſſaries muſt be procured. The moſt ſheltered part of Falſe Bay is a receſs on the weſt ſide, called *Simon's Bay*."

The lateſt and moſt particular as well as apparently the moſt juſt account of the Cape Town, concerning which voyagers have differed very much from one another in their repreſentations, is that given by Mr White in his *Journal of a voyage to New South Wales*. From the ſhipping, he obſerves†, the town appears pleaſantly ſituated, but at the ſame time ſmall; a deception that ariſes from its being built in a valley with ſuch ſtupendous mountains directly behind it. On landing, however, you are ſurpriſed, and agreeably diſappointed, to find it not only extenſive, but well built, and in a good ſtyle; the ſtreets ſpacious, and interſecting each other at right angles with great preciſion. This exactneſs in the formation of the ſtreets, when viewed from the Table Land, is obſerved to be very great. The houſes in general are built of ſtone, cemented together with a glutinous kind of earth which ſerves as mortar, and afterwards neatly plaſtered and whitewaſhed with lime. As to their height they do not in common exceed two ſtories, on account of the violence of the wind, which at ſome ſeaſons of the year blows with great ſtrength and fury. For the ſame reaſon thatch has been uſually preferred to tiles or ſhingles; but the bad effects that have proceeded from this mode when fires happen, has induced the inhabitants in all their new buildings to give the preference to ſlates and tiles. The lower parts of the houſes, according to the cuſtom of the Dutch nation, are not only uncommonly neat and clean in appearance, but they are really ſo; and the furniture is rather rich than elegant. But this is by no means the caſe with the bed-rooms or upper apartments; which are very barely and ill furniſhed. The ſtreets are rough, uneven, and unpaved. But many of the houſes have a ſpace flagged before the door; and others have trees planted before them, which form a pleaſant ſhade, and give an agreeable air to the ſtreets.

The only landing place is at the eaſt end of the town, where there is a wooden quay running ſome paces into the ſea, with ſeveral cranes on it for the convenience of loading and unloading the ſcoots that come along ſide. To this place excellent water is conveyed by pipes, which makes the watering of ſhips eaſy and expeditious. Cloſe to the quay, on the left hand, ſtands the caſtle and principal fortreſs; a ſtrong extenſive work, having excellent accommodations for the troops, and for many of the civil officers belonging to the company. Within the gates, the company have their principal ſtores; which are ſpacious as well as convenient. This fort covers and defends the eaſt part of the town and harbour, as Amſterdam fort does the weſt part. The latter, which has been built ſince commodore Johnſton's expedition, and whereon both French and Dutch judgment have been united to render it effectual and ſtrong, is admirably planned and calculated to annoy and haraſs ſhips coming into the bay. Some ſmaller detached fortifications extend along the coaſt, both to the eaſt and weſt, and make landing, which was not the

† P. 87.

the caſe before the late war, hazardous and difficult. In a word, Cape Town is at this time fortified with ſtrength, regularity, and judgment.

The governor's houſe is delightfully ſituated, nearly in the centre of an extenſive garden, the property of the Dutch Eaſt India company, uſefully planted, and at the ſame time elegantly laid out. The governor's family make what uſe they pleaſe of the produce of the garden, which is various and abundant; but the original intention of the company in appropriating ſo extenſive a piece of ground to this purpoſe was, that their hoſpital which is generally pretty full when their ſhips arrive after long yoyoges, may be well ſupplied with fruits and vegetables, and likewiſe that their ſhips may receive a ſimilar ſupply. This garden is as public as St James's park; and for its handſome, pleaſant, and well-ſhaded walks, is much frequented by perſons of every deſcription, but particularly by the faſhionable and gay. At the upper end of the principal walk is a ſmall ſpace walled in for the purpoſe of confining ſome large oſtriches and a few deer; and a little to the right of this is a ſmall menagery, in which the company have half a dozen wild animals and about the ſame number of curious birds.

There are two churches in the town; one large, plain, and unadorned, for the Calviniſts, the prevailing ſect; and a ſmaller one for the Lutherans. The hoſpital, which is large and extenſive, is ſituated at the upper end of the town, cloſe to the company's garden; where the convaleſcents reap the benefit of a wholeſome pure air, perfumed with the exhalations of a great variety of rich fruit trees, aromatic ſhrubs, and odorous plants and flowers; and likewiſe have the uſe of every production of it.

Beſides their hoſpital, the Dutch Eaſt India company have ſeveral other public buildings, which tend to improve the appearance of the town. The two principal of theſe are, the ſtables and a houſe for their ſlaves. The former is a handſome range of buildings, capable of containing an incredible number of horſes. Thoſe they have at the cape are ſmall, ſpirited, and full of life. The latter is a building of conſiderable extent, where the ſlaves, both male and female, have ſeparate apartments, in a very comfortable ſtyle, to reſide in after the fatigues and toil of the day; and there are ſeveral officers placed over them, who have commodious apartments, and treat them humanely.

The inhabitants of the Cape, though in their perſons large, ſtout, and athletic, have not all that phlegm about them which is the characteriſtic of Dutchmen in general. The phyſical influence of climate may in ſome degree account for this; for it is well known that in all ſouthern latitudes the temper and diſpoſition of the people are more gay, and that they are more inclined to luxury and amuſements of every kind, than the inhabitants of the northern hemiſphere. The ladies are lively, good-natured, and familiar; and from a peculiar gay turn, they admit of liberties that would be thought reprehenſible in England, though perhaps they as ſeldom overleap the bounds of virtue as the women of other countries.

The heavy draft work about the Cape is moſtly performed by oxen; which are here brought to an uncommon degree of uſefulneſs and docility. It is not uncommon to ſee 14, 16, and ſometimes 18, in one of their teams; when the roads are heavy, they ſometimes, though rarely, yoke 20; all which the Hottentots, Malays, and Cape ſlaves, have in the moſt perfect ſubjection and obedience. One of theſe fellows places himſelf on the fore part of the waggon, or, when loaded, on the top of the load, and with a tremendous long whip, which from its ſize he is obliged to hold in both his hands, manages theſe creatures with inexpreſſible addreſs. When he finds expedition needful, he can make them keep whatever pace he chooſes, either trot or gallop (a gait performed or kept up with difficulty by European oxen), and that with as much eaſe as if he was driving horſes. They likewiſe manage horſes with the ſame dexterity; and to ſee one of them driving three, four, five, and ſometimes ſix pair, in hand, with one of theſe long whips, would make the moſt complete maſter of the whip in England cut a deſpicable figure. Carriages are not very numerous at the Cape, as the inhabitants in general travel in covered waggons, which better ſuit the roughneſs of the country. The governor and ſome few of the principal people keep coaches, which are a good deal in the Engliſh ſtyle, and always drawn by ſix horſes.

Good Manners. See MANNERS.

GOODINGS, in ſea-language, are clamps of iron bolted on the ſtern-poſt of a ſhip, whereon to hang the rudder and keep it ſteady; for which purpoſe there is a hole in each of them, to receive a correſpondent ſpindle bolted on the back of the rudder, which turns thereby as upon hinges.

GOOSE, in ornithology. See ANAS. The gooſe was held in great eſteem amongſt the Romans, for having ſaved the Capital from the invaſion of the Gauls by cackling and clapping its wings. Geeſe were kept in the temple of Juno; and the cenſors, when they entered upon their office, provided meat for them. There was alſo an annual feaſt at Rome, at which they carried a ſilver image of a gooſe in ſtate; and hanged a dog, to puniſh that animal becauſe he did not bark at the arrival of the Gauls.

Gooſe-Ander, in ornithology. See MERGUS.

Gooſe-Berry, in botany. See RIBES.

Gooſe-Neck, in a ſhip, a piece of iron fixed on the one end of the tiller, to which the laniard of the whip-ſtaff or the wheel-rope comes, for ſteering the ſhip.

Gooſe-Wing, in the ſea-language. When a ſhip ſails before, or with a quarter-wind on a freſh gale, to make the more haſte, they lanch out a boom and ſail on the lee-ſide; and a ſail ſo fitted, is called a *gooſe-wing*.

GORCUM, a town of the United Provinces, in South Holland, which carries on a conſiderable trade in cheeſe and butter. It is ſituated on the rivers Ligne and Maeſe, in E. Long. 4. 55. N. Lat. 51. 49.

GORDIANUS I. (a Roman general), was for his valour and virtues choſen emperor by the army in the reign of Maximinus, A. D. 237; but his ſon, whom he had aſſociated with himſelf in the throne, being ſlain by Capellian, the governor of Mauritania for Maximinus, Gordianus killed himſelf the ſame year. See ROME.

GORDIANUS III. (grandſon of the former), a renowned warrior, was ſtyled *The guardian of the Roman* *commonwealth*. He was treacherouſly aſſaſſinated by Philippus, an Arabian, one of his generals; who, to the eternal diſgrace of the Romans of that era, ſucceeded him in the empire, A. D. 244. See ROME.

GORDIAN-KNOT, in antiquity, a knot made in the leathers or harneſs of the chariot of Gordius king of Phrygia, ſo very intricate, that there was no finding where it began or ended. The inhabitants had a tradition, that the oracle had declared, that he who untied this knot ſhould be maſter of Aſia. Alexander having undertaken it, was unable to accompliſh it; when fearing leſt his not untying it ſhould be deemed an ill augury, and prove a check in the way of his conqueſts, he cut it aſunder with his ſword, and thus either accompliſhed or eluded the oracle.

GORDIUS, the HAIR-WORM, a genus of inſects belonging to the claſs of *vermes inteſtina*. There are ſeveral ſpecies, 1. The aquaticus, or water hair-worm, is 10 or 12 inches in length, and of about the thickneſs of a horſe hair: its ſkin is ſmooth and ſomewhat gloſſy, without furrows; its colour pale yellowiſh white all over, except the head and tail, which are black and gloſſy. The body is rounded, and very ſlender in proportion to its length: the mouth is ſmall, and placed horizontally; the jaws are both of the ſame length, and obtuſe at their extremities. This ſpecies is common in freſh waters, more eſpecially in clay, through which it paſſes as a fiſh does through the water, and is the author of many ſprings. This is the worm that in Guinea and in ſome other of the hot countries gets into the fleſh of the natives, and occaſions great miſchief; with us, though frequent enough in water where people bathe, it never attempts this.—2. The argillaceus, or clay hair-worm, is only a variation of the preceding one in colour, being yellowiſh at the extremities. It chiefly inhabits the clay; and Linnæus calls that its proper element, from its being generally dug out of it.—3. The medinenſis, or muſcular hair-worm, is all over of a pale yellowiſh colour. It is a native of both Indies; frequent in the morning dew, from whence it enters the naked feet of the ſlaves, and occaſions a diſeaſe much known in thoſe countries, and to which children are very liable: it creates the moſt troubleſome itchings, and too often excites a fever and inflammation. It particularly infeſts the muſcles of the arms and legs, from whence it may be drawn out by means of a piece of ſilk or thread tied round the head: but the greateſt caution is neceſſary in this ſimple operation, leſt the animal, by being ſtrained too much, ſhould break; for if any part remains under the ſkin, it quickly grows with redoubled vigour, and becomes a cruel and ſometimes fatal enemy, to the poor ſlaves in particular. Baths with infuſions of bitter plants, and all vermifuges, deſtroy it.—4. The marinus, or ſea hair-worm, is filiform, twiſted ſpirally, and lying flat, about half an inch in length; of a whitiſh colour, ſmooth, and ſcarcely diminiſhing at the head. It is as great a tormenter of herrings, bleaks, and various other fiſh, as the *gordius medinenſis* is of man. The fiſh when infeſted with theſe animals riſe to the ſurface, and tumble about as if in great agony.

GORDIUS, king of Phrygia, and father of Midas, was a poor huſbandman, with two yokes of oxen, wherewith he ploughed his land and drew his wain. An eagle ſitting a long while upon one of his oxen, he conſulted the ſoothſayers; a virgin bid him ſacrifice to Jupiter in the capacity of king. He married the virgin, who brought forth Midas. The Perſians inſtructed by the oracle to ſet the firſt perſon they met in a wain upon the throne, met Gordius, and made him king. Midas for this good fortune dedicated to Jupiter his father's cart. The knot of the yoke, they ſay, was ſo well twiſted, that he who could unlooſe it was promiſed the empire of Aſia; hence the proverb of *the Gordian knot* had its original. See *GORDIAN Knot*.

GORDON (Alexander), an excellent draughtſman and a good Grecian, who reſided many years in Italy, viſited moſt parts of that country, and had alſo travelled into France, Germany, &c. was ſecretary to the Society for Encouragement of Learning; and afterwards to the Egyptian Club, compoſed of gentlemen who had viſited Egypt (viz. lord Sandwich, Dr Shaw, Dr Pococke, &c.) He ſucceeded Dr Stukely as ſecretary to the Antiquarian Society, which office he reſigned in 1741 to Mr Joſeph Ames. He went to Carolina with governor Glen, where, beſides a grant of land, he had ſeveral offices, ſuch as regiſter of the province, &c. and died a juſtice of the peace, leaving a handſome eſtate to his family. He publiſhed 1. *Itinerarium Septentrionale*, or a Journey through moſt parts of the Counties of Scotland, in two parts, with 66 copperplates, 1726, folio. 2. Supplement to the *Itinerarium*, 1732, folio. 3. The Lives of Pope Alexander VI. and his ſon Cæſar Borgia. 4. A complete Hiſtory of the ancient Amphitheatres, 1730, 8vo. afterwards enlarged in a ſecond edition. 5. An Eſſay towards explaining the hieroglyphical figures on the coffin of the ancient Mummy belonging to Capt. William Lethieuller, 1737, folio, with cuts. 6. Twenty-five Plates of all the Egyptian Mummies and other Egyptian Antiquities in England, 1739, folio.

GORDON (Thomas), noted for his tranſlations and political writings, was born at Kirkudbright in North Britain. He came young to London; where he ſupported himſelf by teaching languages, until he procured employment under the earl of Oxford in queen Anne's time, but in what capacity is not now known. He firſt diſtinguiſhed himſelf in the defence of Dr Hoadley in the Bangorian controverſy; which recommended him to Mr Trenchard, in conjunction with whom he wrote the well-known Cato's Letters, upon a variety of important public ſubjects. Theſe were followed by another periodical paper, under the title of the Independent Whig; which was continued ſome years after Mr Trenchard's death, by Gordon alone, againſt the hierarchy of the church; but with more acrimony than was ſhown in Cato's Letters. At length Sir Robert Walpole retained him to defend his adminiſtration, to which end he wrote ſeveral pamphlets. At the time of his death, July 28th 1750, he was firſt commiſſioner of the wine licences, an office which he had enjoyed many years. He was twice married. His ſecond wife was the widow of his great friend Trenchard, by whom he had children.—He publiſhed Engliſh tranſlations of Salluſt and Tacitus, with additional diſcourſes to each author, which contain much good matter. Alſo, two collections of his tracts have been preſerved: the firſt intitled, A Cordial for Low-ſpirits, in three volumes; and the ſecond, The Pillars of Prieſtcraft and Orthodoxy ſhaken, in two volumes.

lumes. But theſe, like many other poſthumous things, had better have been ſuppreſſed. In his tranſlations as well as his other works he places the verbs at the ends of ſentences, according to the Latin idiom, in a very ſtiff and affected manner.

GORDONIA, in botany: A genus of the polyandria order, belonging to the monadelphia claſs of plants. The calyx is ſimple; the ſtyle five-cornered, with the ſtigma quinquefid; the capſule quinquelocular; the ſeeds two-fold with a leafy wing. This is a tall and very ſtraight tree, with a regular pyramidal head. Its leaves are ſhaped like thoſe of the common bay, but ſerrated. It begins to bloſſom in May, and continues bringing forth its flowers the greateſt part of the ſummer. The flowers are fixed to foot-ſtalks, four or five inches long; are monopetalous, divided into five ſegments, encompaſſing a tuft of ſtamina headed with yellow apices; which flowers, in November, are ſucceded by a conic capſula having a divided calyx. The capſula, when ripe, opens, and divides into five ſections, diſcloſing many ſmall half-winged ſeeds. This tree retains its leaves all the year, and grows only in wet places, and uſually in water. The wood is ſomewhat ſoft; yet Mr Cateſby mentions his having ſeen ſome beautiful tables made of it. It grows in Carolina, but not in any of the more northerly ſtates.

GORE, in heraldry, one of the abatements, which, according to Guillim, denotes a coward. It is a figure conſiſting of two arch lines drawn one from the ſiniſter chief, and the other from the ſiniſter baſe, both meeting in an acute angle in the middle of the feſs point. See HERALDRY.

GOREE, a ſmall iſland of Africa, near Cape de Verd, ſubject to the French. It is a ſmall ſpot not exceeding two miles in circumference, but its importance ariſes from its ſituation for trade ſo near Cape Verd, and it has been therefore a bone of contention between European nations. It was firſt poſſeſſed by the Dutch, from whom, in 1663, it was taken by the Engliſh; but in 1665 it was retaken by the Dutch, and in 1677 ſubdued by the French, in whoſe poſſeſſion it remained till the year 1759, when the Britiſh arms were every where triumphant; and it was reduced by commodore Keppel, but reſtored to the French at the tready of peace in 1763. It was retaken by the Engliſh in the laſt war, but again reſtored at the peace of 1783. W. Long. 17. 20. N. Lat. 14. 43.

GOREE, the capital town of an iſland of the ſame name in Holland, eight miles ſouth of Briel. E. Long. 3. 50. N. Lat. 51. 55.

GOREY, a borough, fair, and poſt town in the county of Wexford, province of Leinſter, otherwiſe called *Newborough*. It ſtands about 18 miles north of Wexford town, and 45 from Dublin. N. Lat. 52. 40. W. Long. 6. 30. It ſends two members to parliament; patronage in the family of Ram.

GORGE, in architecture, the narroweſt part of the Tuſcan and Doric capitals, lying between the aſtragal, above the ſhaft of the pillar, and the annulets.

GORGE, in fortification, the entrance of the platform of any work. See FORTIFICATION.

GORGED, in heraldry, the bearing of a crown, coronet, or the like, about the neck of a lion, a ſwan, &c. and in that caſe it is ſaid, the lion or cygnet is gorged with a ducal coronet, &c.

GORGED is alſo uſed when the gorge or neck of a peacock, ſwan, or the like bird, is of a different colour or metal from the reſt.

GORGET, a kind of breaſt-plate like a half moon, with the arms of the prince thereon; worn by the officers of foot. They are to be either gilt or ſilver, according to the colour of the buttons on the uniforms.

GORGET, or GORGERET, in ſurgery, is the name which the French give to the concave or cannulated conductor, uſed in lithotomy. See SURGERY.

GORGONA, a ſmall iſland of Italy, in the ſea of Tuſcany, and near that of Corſica, about eight miles in circumference; remarkable for the large quantity of anchovies taken near it. E. Long. 10. 0. N. Lat. 43. 22.

GORGONA, a ſmall iſland of the South Sea, 12 miles weſt of the coaſt of Peru, in America. It is indifferent high land, very woody, and ſome of the trees are very tall and large, and proper for maſts. It is about 10 miles in circumference, and has ſeveral ſprings and rivulets of excellent water, but is ſubject to conſtant rains. W. Long. 79. 3. S. Lat. 3. 30.

GORGONIA, in natural hiſtory, a genus of zoophytes, which formerly were called *ceratophytons*, and are known in Engliſh by the names of *ſea-fans*, *ſea-feathers*, and *ſea-whips*. Linnæus and Dr Pallas conſider them as of a mixed nature in their growth, between animals and vegetables; but Mr Ellis ſhows them to be true animals of the polype kind, growing up in a branched form reſembling a ſhrub, and in no part vegetable. They differ from the freſh water polype in many of their qualities, and particularly in producing from their own ſubſtance a hard and ſolid ſupport, ſerving many of the purpoſes of the bone in other animals. This is formed by a concreting juice thrown out from a peculiar ſet of longitudinal parallel tubes, running along the internal ſurface of the fleſhy part: in the coats of theſe tubes are a number of ſmall orifices, through which the oſſeous liquor exſudes, and concreting, forms the layers of that hard part of the annular circles, which ſome, judging from the conſiſtence rather than the texture, have erroneouſly denominated *wood*. The ſurface of the gorgonia is compoſed of a kind of ſcales, ſo well adapted to each other as to ſerve for defence from external injuries: and the fleſh, or, as ſome have called it, the *bark* or *cortex*, conſiſts of proper muſcles and tendons for extending the openings of their cells; for ſending forth from thence their polype ſuckers in ſearch of food; and for drawing them in ſuddenly, and contracting the ſphincter muſcles of theſe ſtarry cells, in order to ſecure theſe tender parts from danger; and alſo of proper ſecretory ducts, to furniſh and depoſite the oſſeous matter that forms the ſtem and branches as well as the baſe of the bone. Mr Ellis affirms, that there are ovaries in theſe animals, and thinks it very probable that many of them are viviparous. See CORALLINES.

GORGONS, in antiquity and mythology. Authors are not agreed in the account they give of the Gorgons. The poets repreſent them as three ſiſters, whoſe names were *Stheno*, *Euryale*, and *Meduſa*; the latter of whom was mortal, and, having been deflowered by Neptune, was killed by Perſeus; the two former were ſubject neither to age nor death. They are deſcribed with wings on their ſhoulders, with ſerpents round their heads, their hands were of braſs, and their teeth of a prodigious ſize, ſo that they were objects of terror to mankind. After the death of Meduſa. her ſiſters, according to Virgil, were appointed to keep the gate of the palace of Pluto.

> *Multaque præterea variarum monſtra ferarum*—
> GORGONES, *Harpyiæque*——

Diodorus Siculus will have the Gorgons and Amazons to have been two warlike nations of women, who inhabited that part of Libya which lay on the lake Tritonidis. The extermination of theſe female nations was not effected till Hercules undertook and performed it.

Pauſanias ſays, the Gorgons were the daughters of Phorbus; after whoſe death Meduſa, his daughter, reigned over the people dwelling near the lake Tritonidis. The queen was paſſionately fond of hunting and war, ſo that ſhe laid the neighbouring countries quite waſte. At laſt, Perſeus having made war on them, and killed the queen herſelf, when he came to take a view of the field of battle, he found the queen's corpſe ſo extremely beautiful, that he ordered her head to be cut off, which he carried with him to ſhow his countrymen the Greeks, who could not behold it without being ſtruck with aſtoniſhment.

Others repreſent them as a kind of monſtrous women, covered with hair, who lived in woods and foreſts. Others, again, make them animals reſembling wild ſheep, whoſe eyes had a poiſonous and fatal influence

GORITIA, or GORITZ, a ſtrong town of Germany, in the circle of Auſtria, and duchy of Carniola, with a caſtle; ſeated on the river Lizonzo, 20 miles north-eaſt of Aquileia, and 70 north-eaſt of Venice. E. Long. 13. 43. N. Lat. 46. 12.

GORLÆUS (ABRAHAM), an eminent antiquary, was born at Antwerp, and gained a reputation by collecting medals and other antiques. He was chiefly fond of the rings and ſeals of the ancients, of which he publiſhed a prodigious number in 1601, under this title, *Dactyliotheca; ſive Annulorum Sigillarium, quorum apud priſcos tam Græcos quam Romanos uſus ex ferro, ære, argento, et auro, Promptuarium.* This was the firſt part of the work: the ſecond was intituled, *Variarum Gemmarum, quibus antiquitas in ſignando uti ſolita ſculpturæ.* This work has undergone ſeveral editions, the beſt of which is that of Leyden, 1695: for it not only contains a vaſt number of cuts, but alſo a ſhort explication of them by Gronovius. In 1608, he publiſhed a collection of medals: which, however, if we may believe the *Scaligerana*, it is not ſafe always to truſt. Gorlæus pitched upon Delft for the place of his reſidence, and died there in 1609. His collections of antiques were ſold by his heirs to the prince of Wales.

GORLITZ, a town of Germany, in Upper Luſatia, ſubject to the elector of Saxony. It is a handſome ſtrong place, and ſeated on the river Neiſſe, in E. Long. 15. 15. N. Lat 51. 10.

GORTERIA, in botany: A genus of the polygamia fruſtanea order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order, *Compoſitæ*. The receptacle is naked; the pappus woolly; the florets of the radius ligulated or plane; the calyx imbricated with ſpinous ſcales.

GOSHAWK. See FALCO.

GOSHEN (anc. geog.), a canton of Egypt, which Joſeph procured for his father and brethren when they came to dwell in Egypt. It was the moſt fruitful part of the country: and its name ſeems to be derived from the Hebrew, *Geſhem*, which ſignifies "rain;" becauſe this province lying very near the Mediterranean, was expoſed to rains, which were very rare in other cantons, and more eſpecially in Upper Egypt. Calmet does not queſtion but that Goſhen, which Joſhua (x. 41. xi. 16. xv. 51.) makes part of the tribe of Judah, is the ſame as the land of Goſhen, which was given to Jacob and his ſons by Pharaoh king of Egypt: (Gen. xlvi. 28). It is certain that this country lay between Paleſtine and the city of Tanais, and that the allotment of the Hebrews reached ſouthward as far as the Nile, (Joſh. xiii. 3.)

GOSLAR, a large and ancient town of Lower Saxony, and in the territory of Brunſwick; it is a free imperial city, and it was here that gunpowder was firſt invented, by a monk as is generally ſuppoſed. It is a large place, but the buildings are in the ancient taſte. In 1728, 280 houſes, and St Stephen's fine church, were reduced to aſhes. It is ſeated on a mountain, near the river Goſe, and near it are rich mines of iron. The inhabitants are famous for brewing excellent beer. E. Long. 3. 37. N. Lat. 51. 55.

GOSPEL, the hiſtory of the life, actions, death, reſurrection, aſcenſion, and doctrine of Jeſus Chriſt.—The word is Saxon, and of the ſame import with the Latin term *evangelium*, which ſignifies glad tidings, or good news.

This hiſtory is contained in the writings of St Matthew, St Mark, St Luke, and St John; who from thence are called *evangeliſts*. The Chriſtian church never acknowledged any more than theſe four goſpels as canonical; notwithſtanding which, ſeveral apocryphal goſpels are handed down to us, and others are entirely loſt.

GOSPORT, a town of Hampſhire, 79 miles from London, in the pariſh of Alverſtock. It has a ferry over the mouth of the harbour to Portſmouth, and is a large town and of great trade, eſpecially in time of war. Travellers chooſe to lodge here, where every thing is cheaper and more commodious for them than at Portſmouth. The mouth of the harbour, which is not ſo broad here as the Thames at Weſtminſter, is ſecured on this ſide by four forts, and a platform of above 20 cannon level with the water. Here is a noble hoſpital built for the cure of the ſick and wounded ſailors in the ſervice of the navy; beſides a free ſchool.

GOSSAMER is the name of a fine filmy ſubſtance, like cobwebs, which is ſeen to float in the air, in clear days in autumn, and is more obſervable in ſtubble-fields, and upon furze and other low buſhes. This is probably formed by the flying ſpider, which in traverſing the air for food, ſhoots out theſe threads from its anus, which are borne down by the dew, &c.

GOSSYPIUM, or COTTON: A genus of the polyandria order, belonging to the monadelphia claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ*. The calyx is double, the exterior one trifid; the capſule quadrilocular; the ſeeds wrapt in cotton-wool. There are four ſpecies, all of them natives of warm climates. 1. The herbaceum, or common herbaceous cotton, hath an herbaceous ſmooth ſtalk two feet high, branching upwards;

five-lobed ſmooth leaves; and yellow flowers from the ends of the branches, ſucceeded by roundiſh capſules full of ſeed and cotton. 2. The hirſutum, or hairy American cotton, hath hairy ſtalks branching laterally two or three feet high: palmated, three and five lobed hairy leaves; and yellow flowers, ſucceeded by large oval pods furniſhed with ſeeds and cotton. 3. The barbadenſe, or Barbadoes ſhrubby cotton, hath a ſhrubby ſtalk branching four or five feet high, three-lobed ſmooth leaves, glandulous underneath; and yellow flowers ſucceeded by oval pods, containing ſeeds and cotton. 4. The arboreum, or tree cotton, hath an upright woody perennial ſtalk, branching ſix or eight feet high; palmated, four or five lobed ſmooth leaves; and yellow flowers, ſucceeded by large pods filled with ſeeds and cotton.

The firſt three ſpecies are annual, but the fourth is perennial both in root and ſtalk. In warm countries theſe plants are cultivated in great quantities in the fields for the ſake of the cotton they produce; but the firſt ſpecies is moſt generally cultivated. The pods are ſometimes as large as middling-ſized apples, cloſely filled with the cotton ſurrounding the ſeed. When theſe plants are raiſed in Britain, they muſt be continually kept in a warm ſtove, where they will produce ſeeds and cotton. They are propagated by ſeeds. See Cotton.

The American Iſlands produce cotton ſhrubs of various ſizes, which riſe and grow up without any culture; eſpecially in low and marſhy grounds. Their produce is of a pale red; ſome paler than others; but ſo ſhort that it cannot be ſpun. None of this is brought to Europe, though it might be uſefully employed in making of hats. The little that is picked up, ſerves to make matreſſes and pillows.

The cotton-ſhrubs that ſupplies our manufactures, requires a dry and ſtony ſoil, and thrives beſt in grounds that have already been tilled. Not but that the plant appears more flouriſhing in freſh lands than in thoſe which are exhauſted; but while it produces more wood, it bears leſs fruit.

A weſtern expoſure is fitteſt for it. The culture of it begins in March and April, and continues during the firſt ſpring-rains. Holes are made at ſeven or eight feet diſtance from each other, and a few ſeeds thrown in. When they are grown to the height of five or ſix inches, all the ſtems are pulled up, except two or three of the ſtrongeſt. Theſe are cropped twice before the end of Auguſt. This precaution is the more neceſſary, as the wood bears no fruit till after the ſecond pruning; and, if the ſhrub was ſuffered to grow more than four feet high, the crop would not be the greater, nor the fruit ſo eaſily gathered. The ſame method is purſued for three years; for ſo long the ſhrub may continue, if it cannot conveniently be renewed oftener with the proſpect of an advantage that will compenſate the trouble.

This uſeful plant will not thrive if great attention is not paid to pluck up the weeds that grow about it. Frequent rains will promote its growth; but they muſt not be inceſſant. Dry weather is particularly neceſſary in the months of March and April, which is the time of gathering the cotton, to prevent it from being diſcoloured and ſpotted.

When it is all gathered in, the ſeeds muſt be picked out from the wool with which they are naturally mixed. This is done by means of a cotton-mill; which is an engine compoſed of two rods of hard wood, about 18 feet long, 18 lines in circumference, and fluted two lines deep. They are confined at both ends, ſo as to leave no more diſtance between them than is neceſſary for the ſeed to ſlip through. At one end is a kind of little millſtone, which, being put in motion with the foot, turns the rods in contrary directions. They ſeparate the cotton, and throw out the ſeed contained in it.

GOTHA, a town of Germany, in the circle of Upper Saxony, and capital of the duchy of Saxe-Gotha, in E. Long. 10. 36. N. Lat. 51. Some fancy this town had its name from the Goths, and that they fortified it in their march to Italy; but it was only a village till ſurrounded with walls by the biſhop of Mentz in 964. It is ſituated in a fine plain on the river Leina, well built and ſtrongly fortified. Here are two handſome churches and a very good hoſpital. Its chief trade is in dyers wood, of which they have three crops, but the third grows wild. The neighbouring country produces a vaſt deal of corn. The caſtle or ducal palace of Gotha was rebuilt in the 16th century by duke Erneſt, ſurnamed *the Pious*, who cauſed both that and the town to be encompaſſed with ditches and ramparts; and gave it the name of *Friedenſtein*, or the *Caſtle of Peace*, in oppoſition to its ancient name of *Grimmerſtein*, or the *Caſtle of the Furies*. It is ſituated on a neighbouring eminence, from whence there is a vaſt proſpect of a fruitful plain. In one of the apartments there is a collection of valuable rarities, and a noble library.

The dukedom of Saxe-Gotha is about 30 miles long, and 12 broad. The reigning duke is Lewis Erneſt, born in 1745, and married to the princeſs Maria Charlotte of Saxe Meningen, by whom he has iſſue. He is the head of the Erneſtine line of Saxony, deſcended from the elector John Frederic the Magnanimous, who was deprived of the electorate by the emperor Charles V. in 1574; ſince which the youngeſt branch called the *Albertine* has enjoyed it. He has ſeveral other principalities beſides that of Saxe-Gotha; and his revenues are computed at L.200,000 a year, with which he maintains about 3000 regular troops. As he is the moſt powerful of all the Saxon princes of the Erneſtine branch; ſo of all the courts of Saxony, next to that of Dreſden, he has the moſt numerous and the moſt magnificent. His guards are well clothed, his liveries rich, and his tables ſerved with more elegance than profuſion. And yet by the prudent management of his public finances, his ſubjects are the leaſt burdened with taxes of any ſtate in Germany. The religion is Lutheran.

GOTHARD, one of the higheſt mountains of Switzerland; and from the top, where there is a hoſpital for monks, is one of the fineſt proſpects in the world. It is eight miles from Aldorf.

GOTHEBORG, or Gothenburg, or *Cottenburg*. See Gottenburg.

GOTHIC, in general, whatever has any relation to the Goths: thus we ſay, Gothic cuſtoms, Gothic architecture, &c. See Architecture.

GOTHLAND, the moſt ſouthern province of Sweden, being a peninſula, encompaſſed on three ſides by the Baltic Sea, or the channel at the entrace of it.

It is divided into ſeveral parts, which are, Eaſt Gothland, Weſt Gothland, Smaland, Halland, Bleaking, and Schonen. It was a long time in the poſſeſſion of the kings of Denmark, but was ceded to Sweden in 1654. The principal towns of Gothland are Calmar, Landſcroon, Chriſtianople, Daleburg, Gothenburg, Helmſtat, Lunden, Malmone, and Vexio.

GOTHS, a warlike nation, and above all others famous in the Roman hiſtory, came originally out of Scandinavia (the name by which the ancients diſtinguiſhed the preſent countries of Sweden, Norway, Lapland, and Finmark). According to the moſt probable accounts, they were the firſt inhabitants of thoſe countries; and from thence ſent colonies into the iſlands of the Baltic, the Cimbrian Cherſoneſus, and the adjacent places yet deſtitute of inhabitants. The time of their firſt ſettling in Scandinavia, and the time when they firſt peopled with their colonies the abovementioned iſlands and Cherſoneſus, are equally uncertain; tho' the Gothic annals ſuppoſe the latter to have happened in the time of Serug the great grandfather of Abraham. This firſt migration of the Goths is ſaid to have been conducted by their king Eric; in which all the ancient Gothic chronicles, as well as the Daniſh and Swediſh ones, agree. Their ſecond migration is ſuppoſed to have happened many ages after; when, the abovementioned countries being overſtocked with people, Berig, at that time king of the Goths, went out with a fleet in queſt of new ſettlements. He landed in the country of the Ulmerugians, now Pomerania, drove out the ancient inhabitants, and divided their lands among his followers. He fell next upon the Vandals, whoſe country bordered on that of the Ulmerugians, and overcame them; but inſtead of forcing them to abandon their country, he only made them ſhare their poſſeſſions with the Goths.

The Goths who had ſettled in Pomerania and the adjacent parts of Germany being greatly increaſed inſomuch that the country could no longer contain them, they undertook a third migration in great numbers, under Filimer ſurnamed the *Great*, their fifth prince after leaving Scandinavia; and taking their route eaſtward, entered Scythia, advanced to the Cimmerian Boſphorus, and, driving out the Cimmerians, ſettled in the neighbourhood of the Palus Mæotis. Thence in proceſs of time, being greatly increaſed in Scythia, they reſolved to ſeek new ſettlements; and, accordingly taking their route eaſtward, they traverſed ſeveral countries, and at length returned into Germany.

Their leader in this expedition was the celebrated Woden, called alſo *Voden*, *Othen*, *Oden*, *Godan*, and *Gaudan*. Of this Woden many wonderful things are related in the Sueo-gothic chronicles. He was king of the Aſgardians, whom the northern writers will have to be the ſame with a people called *Aſpurgians* mentioned by Strabo and Ptolemy. By Strabo they are placed near the Cimmerian Boſphorus. Aſpurgia was the metropolis of a province which Strabo calls *Aſia*; and Woden and his followers are ſtyled by the ancient Gothic writers *Aſæ*, *Aſianæ*, and *Aſiotæ*. The kings of Aſpurgia were maſters of all that part of Scythia which lay to the weſtward of Imaus, and was by the Latins called *Scythia intra Imaum*, or "Scythia within Imaus."

At what time Woden reigned in this country, is quite uncertain; but all hiſtorians agree, that he went out in queſt of new ſettlements with incredible numbers of people following him. He firſt entered Roxolania, comprehending the countries of Pruſſia, Livonia, and great part of Muſcovy. From thence he went by ſea into the north parts of Germany; and having reduced Saxony and Jutland, he at laſt ſettled in Sweden, where he reigned till his death, and became ſo famous that his name reached all countries, and he was by the northern nations worſhipped as a god. He is ſuppoſed to have brought with him the Runic characters out of Aſia, and to have taught the northern nations the art of poetry; whence he is ſtyled the father of the Scaldi or Scaldri, their poets, who deſcribed in verſe the exploits of the great men of their nation, as the bards did among the Gauls and Britons.

The Romans diſtinguiſhed the Goths into two claſſes; the Oſtrogoths and Viſigoths. Theſe names they received before they left Scandinavia, the *Viſigoths* being ſoftened by the Latins from *Weſterogoths*, or thoſe who inhabited the weſtern part of Scandinavia, as the Oſtrogoths were thoſe who inhabited the eaſtern part of that country. Their hiſtory affords nothing of moment till the time of their quarrelling with the Romans, which happened under the reign of the emperor Caracalla, ſon to Severus. After that time their hiſtory becomes ſo cloſely interwoven with that of the Romans, that for the moſt remarkable particulars of it we muſt refer to the article ROME. After the deſtruction of the Roman empire by the Heruli, the Oſtrogoths, under their king Theodoric, became maſters of the greateſt part of Italy, having overcome and put to death Odoacer king of the Heruli in 494. They retained their dominion in this country till the year 553; when they were finally conquered by Narſes, the emperor Juſtinian's general: See (Hiſtory of) ITALY. The Viſigoths ſettled in Spain in the time of the emperor Honorius, where they founded a kingdom which continued till the country was ſubdued by the Saracens; ſee the article SPAIN.

The Goths were famous for their hoſpitality and kindneſs to ſtrangers, even before they embraced the Chriſtian religion. Nay, it is ſaid, that from their being eminently good, they were called *Goths*, by the neighbouring nations; that name, according to Grotius and moſt other writers, being derived from the German word *goten*, which ſignifies "good." They encouraged, ſays Dio, the ſtudy of philoſophy above all other barbarous or foreign nations, and often choſe kings from among their philoſophers. Polygamy was not only allowed but countenanced among them; every one being valued or reſpected according to the number of his wives. By ſo many wives they had an incredible number of children, of whom they kept but one at home, ſending out the reſt in queſt of new ſettlements; and hence thoſe ſwarms of people which overran ſo many countries. With them adultery was a capital crime, and irremiſſibly puniſhed with death. This ſeverity, and likewiſe polygamy, prevailed among them when they were known to the Romans only by the name of *Getes* (their moſt ancient name); as appears from the poet Menander, who was himſelf one of that nation; and from Horace, who greatly commends the chaſtity of their women. Their laws fell little ſhort of thoſe of the ancient Romans. Their government was monarchical; their religion was much the ſame with that of the ancient Germans or Celtes; and their dreſs is deſcribed by Apollinaris Sidonius in the following words: "They are ſhod (ſays he) with high ſhoes made of hair, and reaching up to their ankles; their knees, thighs, and legs, are without any covering; their garments of various colours ſcarce reaching to the knee; their ſleeves only cover the top of their arms; they wear green caſſocks with a red border; their belts hang on their ſhoulder; their ears are covered with twiſted locks; they uſe hooked lances and miſſile weapons."

GOTHOFRED, or **Godfrey**, (Dennis or Dionyſius), an eminent civil lawyer, born of an illuſtrious houſe at Paris, in 1549. Finding his country involved in the confuſion of the leaguers, he accepted of a profeſſor's chair at Geneva, until he was patronized and employed by Henry IV.; but being afterwards ſtripped of his employments as a huguenot, he at length retired to Heidelburg, from whence no offers were able to detach him. He was, however, diſappointed of his intention to end his days there; for the diſturbances that broke out in the Palatinate obliged him, in 1621, to take refuge in Straſburg, where he died the following year. He wrote a great number of books; but his principal work is the *Corpus Juris Civilis cum notis*.

Gothofred (Theodore), a ſon of the former, was born at Geneva in 1580. As ſoon as he had finiſhed his ſtudies, he went to Paris; where he conformed to the Romiſh religion, and applied with indefatigable induſtry to the ſtudy of hiſtory, that of France particularly, wherein he became very eminent, as appears by his works. In 1632, the king made him one of his hiſtoriographers, with a ſtipend of 3000 livres; and, in 1636, he was ſent to Cologn, to aſſiſt at the treaty of peace negociating there, on the part of France, by the cardinal of Lyons. This treaty being removed to Munſter, Gothofred was ſent thither, where he drew up Memoirs on the ſubject; and continued in that city, in the king's ſervice, to his death in 1649. His principal work is his "Account of the Ceremonial of the kings of France."

Gothofred (James), brother of the preceding, was born at Geneva in 1587. Applying himſelf to the ſtudy of the law, he obtained the profeſſor's chair there, was made counſellor of the city, and was ſeveral times employed in France, Germany, Piedmont, and Switzerland, to negociate their affairs in the name of the republic. He died in 1562; and his chief work is his *Codex Theodoſianus, cum perpetuis commentariis, &c.*

Gothofred (Dennis), a ſon of Theodore abovementioned, was born at Paris in 1615. He ſtudied hiſtory after his father's example; became as eminent in that department of knowledge; and obtained the reverſion of his father's place of hiſtoriographer royal, from Louis XIII. when he was but 25 years of age. He publiſhed his father's *Ceremonial of France*; finiſhed his *Memoirs of Philip de Commines*; and was preparing a *Hiſtory of Charles VIII.* when he died in 1681. It was publiſhed by his eldeſt ſon, Dennis, in 1684.

GOTTENBURG, a rich and ſtrong town of Weſt Gothland, in Sweden, with a good harbour, at the mouth of the river Gothelba; which is the beſt ſituated for foreign trade of any in Sweden, as it lies without the Sound. It occupies the ſite of an ancient town, named *Lodeſe*, which was built by Guſtavus Vaſa; and being endowed with conſiderable privileges, ſoon became the great emporium for the trade of the weſtern provinces. Charles IX. when duke of Gothland, having in 1604 laid the foundation of a new town in the iſland of Hiſingen at no great diſtance from Lodeſe, called it *Gotheborg* (ſince corrupted into *Gottenburg*), in honour of his duchy. Upon his acceſſion to the throne, he erected in his new town a trading company; drew thither many foreigners, particularly the Dutch, to whom he allowed an exemption from all duties of export and import during 20 years; a corps of Engliſh and Scotch troops, under the command of William Stewart; and granted to the Calviniſts eſtabliſhed therein the free exerciſe of their religion, the firſt place in Sweden where this toleration was permitted. The town, being in 1611 reduced to aſhes by the Danes, was rebuilt in the reign of Guſtavus Adolphus in its preſent ſituation, and obtained a confirmation of its ancient rights, with the grant of ſeveral additional privileges.—It is built in a very ſingular ſituation. At a ſmall diſtance from the ſea is a marſhy plain, ſcarcely more than half a mile in breadth, watered by the rivers Gotha and Moldal, and almoſt entirely incloſed with high ridges of rocks, ſo bare and rugged, that they ſcarcely produce a ſingle blade of graſs, and exhibit as barren an appearance as the ſummits of the loftieſt Alps. Gottenburg ſtands partly upon the ridges, and partly in the plain; and is divided from theſe different ſituations into the Upper and Lower Town. The latter is entirely level, interſected by ſeveral canals in the manner of the Dutch towns; and its houſes are all conſtructed upon piles: the upper part hangs upon the declivities; and rows of buildings riſe one above the other like the ſeats of an amphiteatre. The whole is regularly fortified; and its circumference is near three miles, excluſive of the ſuburbs, called *Haga*, which lie towards the harbour. The ſtreets are all uniformly ſtraight: a few of the houſes are of brick; but the generality are conſtructed with wood painted red. The harbour is formed by two chains of rocks, and is about a quarter of a mile in breadth. Its entrance is defended by the fort of New Elfsborg, which ſtands upon a ſmall rocky iſland, and contains a garriſon of 250 men. There has been lately eſtabliſhed at Gottenburgh a Royal Society of Sciences and Literature, upon the plan of that of Upſala.—Mr Coxe was informed by a merchant who had reſided 22 years at Gottenburg, that, during that period, its population had increaſed conſiderably, and that it now contained about 30,000 inhabitants. This flouriſhing ſtate is attributed to the extenſion of its commerce, particularly its Eaſt India Company, and the ſucceſs of the herring fiſhery. An Engliſh conſul and ſeveral merchants of that nation reſide at Gottenburg: and a chapel, with a regular chaplain, is appropriated to their uſe. E. Long. 11. 50. N. Lat. 57. 44.

GOTTINGEN, a conſiderable town of Lower Saxony in Germany, and in the duchy of Brunſwick; formerly free and imperial, but now ſubject to the elector of Hannover. Here his late Majeſty George II. founded an univerſity. It is ſeated on the river Leine, in E. Long. 10. 5. N. Lat. 51. 32.

GOTTORP, a town of the duchy of Heſwic, in Denmark, and capital of the duchy of Holſtein Gottorp, where the duke has a very fine palace.

GOUANIA, in botany: A genus of the monœcia order, belonging to the polygamia claſs of plants. The calyx of the hermaphrodite is quinquefid; there is no corolla; there are five antheræ covered with an elaſtic calyptra or hood; the ſtyle trifid; the fruit, inferior to the receptacle of the flower, diviſible into three ſeeds. The male is like the hermaphrodite, but wanting ſtigma and germen.

GOUDA, or Turgow, a conſiderable town of South Holland, in the United Provinces, remarkable for its ſtately church. It is ſeated on the river Iſſel, in E. Long. 4. 37. N. Lat. 52. 2.

GOUDT (Henry), uſually called *Count Goudt*, was born of a noble family at Utrecht, in 1750; and was a knight of the Palatinate. Being paſſionately fond of the arts, particularly painting and engraving, and deſirous of engaging in them, he applied himſelf diligently to drawing, and made a great proficiency therein. He went to Rome, to examine the works of the great maſters in that city. Here he contracted an intimacy with that excellent artiſt Adam Elſheimer; ſtudied his manner of penciling, deſigning, and colouring; and made his works models for his own imitation. He pre-engaged all the pictures that his friend and favourite could finiſh, and even paid liberally for them before-hand; by which means he found himſelf in poſſeſſion of a moſt deſirable treaſure. Thoſe pictures which Goudt himſelf painted were neatly and delicately touched, in colour and pencil reſembling Elſheimer, though they were in no degree equal to the paintings of that admirable maſter. On his return to his native country, a young woman who was in love with him, and deſirous of fixing his affections upon her gave him in his drink a love philtre: which, however, terminated in a very melancholy manner, by depriving him totally of his ſenſes; and in the dreadful ſtate of idiotiſm he dragged on a miſerable life to the age of 69, his death happening in 1639. It is remarkable, that though loſt to every other ſubject, when painting was ſpoken of he would diſcourſe upon it in a very rational manner.

Goudt practiſed engraving as well as painting, and made ſeven beautiful prints after the pictures of Elſheimer, which are well known to the curious, and are to be met with in moſt choice collections. He worked with the graver only, in a very neat ſtyle; and produced a moſt powerful effect, not by ſtrengthening the ſtrokes, according to the uſual method, but by croſſing them with additional ſtrokes, equally neat, and that five or ſix times, one over another, in the deep ſhadows. Conſidering the preciſion with which he executed his engravings, the freedom of handling the graver which may be diſcovered in them, is very aſtoniſhing. The weeds and other parts of the fore-ground in that admirable print of the Ceres, are very finely expreſſed. The heads of the figures are correctly drawn, and the other extremities are managed in a judicious manner. The ſeven prints done by him, from Elſheimer, mentioned above, are, 1. Ceres drinking from a pitcher. An old woman appears holding a candle at the door of the cottage, and a boy naked ſtanding by her is laughing and pointing at the goddeſs; for which contempt he was metamorphoſed by her into a frog. The powerful and ſtriking effect of this engraving cannot be properly deſcribed. This print is diſtinguiſhed alſo by the name of the *ſorcery*. 2. The flight into Egypt: A night-ſcene, in which the moon and ſtars are introduced with great ſucceſs. 3. The angel with Tobit, who is drawing a fiſh by his ſide. The back-ground is a landſcape; the weeds in the foreground, and the branches of the trees in front, as well as the foliage and weeds hanging from them, are beautifully expreſſed. 4. The angel with Tobit, croſſing a ſtream of water: The back-ground, a landſcape. 5. Baucis and Philemon entertaining Jupiter and Mercury. 6. A landſcape, called the *Aurora*, repreſenting the dawn of day. The effect is very beautiful. 7. The beheading of St John in priſon, a very ſmall upright oval print, which is by far the ſcarceſt.

GOVERNMENT, in general, is the polity of a ſtate, or an orderly power conſtituted for the public good.

Civil government was inſtituted for the preſervation and advancement of mens civil intereſts, and for the better ſecurity of their lives, liberties, and properties. The uſe and neceſſity of government is ſuch, that there never was an age or country without ſome ſort of civil authority: but as men are ſeldom unanimous in the means of attaining their ends, ſo their differences in opinion in relation to government has produced a variety of forms of it. To enumerate them would be to recapitulate the hiſtory of the whole earth. But, according to Monteſquieu, and moſt other writers, they may in general be reduced to one of theſe three kinds. 1. The republican. 2. The monarchical. 3. The deſpotic.—The firſt is that, where the people in a body, or only a part of the people, have the ſovereign power; the ſecond, where one alone governs, but by fixed and eſtabliſhed laws; but in the deſpotic government, one perſon alone, without law and without rule, directs every thing by his own will and caprice. See the article Law, nº 1. 3—10.—On the ſubject of government at large, ſee Monteſquieu's *L'Eſprit des Loix*, l. 2. c. i.; Locke, ii. 129, &c. quarto edition, 1768; Sidney on Government; Sir Thomas Smith *de Repub. Angl.* and Acherly's Britannic Conſtitution.—As to the Gothic government, its original and faults, &c. ſee Monteſquieu's *L'Eſprit des Loix*, l. 11. c. 8.—With reſpect to the feudal policy, how it limited government; ſee *Feodal Syſtem*.

Government is alſo a poſt or office, which gives a perſon the power or right to rule over a place, a city, or a province, either ſupremely or by deputation.

Government is likewiſe uſed for the city, country, or place to which the power of governing is extended.

GOUGE, an inſtrument uſed by divers artificers, being a ſort of round hollow chiſſel; ſerving to cut holes, channels, grooves, &c. in wood, ſtone, &c.

GOULART (Simon), a famous miniſter of Geneva, was born at Senlis in 1543; and was one of the moſt indefatigable writers of his time. He made conſiderable additions to the Catalogue of witneſſes of the truth, compoſed by Illyricus; and acquired a great reputation by his works; the principal of which are, 1. A tranſlation of Seneca. 2. A collection of memorable hiſtories. 3. A tranſlation of St Cyprian *De lapſis.*

lapſis. 4. Several devotional and moral treatiſes. He died at Geneva in 1628.

GOURD, in botany. See CUCURBITA.

GOURGUES (Dominique de), an illuſtrious French patriot, a private gentleman of Gaſcony. The Spaniards having inhumanly maſſacred a colony of Frenchmen who had ſettled in Florida, Gourgues took a ſevere revenge on them, an account of which is given under the article FLORIDA. On his return, he was received with acclamations by his countrymen, but was forbid to appear at court. Queen Elizabeth invited him to command an Engliſh fleet againſt the Spaniards in 1593; but he died at Tours in his way to England.

GOURNAY, a town of France, in the duchy of Normandy and territory of Bray, celebrated for its butter market. It is ſituated on the river Ept, in E. Long. 0. 33. N. Lat. 49. 25.

GOURNAY (Mary de Jars de), a lady celebrated for her learning, was the daughter of William de Jars, lord of Neufvi and Gournay. After the death of her father, ſhe was protected by Montaigne and Cardinal Richelieu. To the daughter of the former ſhe dedicated her Noſegay of Pindus; and compoſed ſeveral other works, the moſt conſiderable of which is *Les Avis*. She died at Paris in 1685, aged 80. The critics are divided concerning the reputation of this lady: by ſome ſhe is ſtyled the *Syren of France*; others ſay her works ſhould have been buried with her.

GOUT. See (*Index* ſubjoined to) MEDICINE.

GOWER (John), one of the moſt ancient Engliſh poets, was cotemporary with Chaucer, and his intimate friend. Of what family, or in what county he was born, is uncertain. He ſtudied the law, and was ſome time a member of the ſociety of Lincoln's-inn, where his acquaintance with Chaucer began. Some have aſſerted that he was a judge; but this is by no means certain. In the firſt year of Henry IV. he became blind; a misfortune which he laments in one of his Latin poems. He died in the year 1402; and was buried in St Mary Overie, which church he had rebuilt chiefly at his own expence, ſo that he muſt have lived in affluent circumſtances. His tomb was magnificent, and curiouſly ornamented. It ſtill remains, but hath been repaired in later times. From the collar of SS round the neck of his effigies, which lies upon the tomb, it is conjectured that he had been knighted. As to his character as a man, it is impoſſible, at this diſtance of time, to ſay any thing with certainty. With regard to his poetical talents, he was undoubtedly admired at the time when he wrote, though a modern reader may find it difficult to diſcover much harmony or genius in any of his compoſitions. He wrote, 1. *Sepeculum meditantis*, in French, in ten books. There are two copies of this in the Bodleian library. 2. *Vox clamantis*, in Latin verſe, in ſeven books. Preſerved alſo in the Bodleian library, and in that of All-Souls. It is a chronicle of the inſurrection of the commons in the reign of Richard II. 3. *Confeſſio amantis*; printed at Weſtminſter by Caxton in 1493. Lond. 1532, 1554. It is a ſort of poetical ſyſtem of morality, interſperſed with a variety of moral tales. 4. *De rege Henrico IV*. Printed in Chaucer's works. There are likewiſe ſeveral hiſtorical tracts, in manuſcript, written by our author, which are to be found in different libraries; alſo ſome ſhort poems printed in Chaucer's works.

GOWN, ROBE, a long upper garment, worn by lawyers, divines, and other graduates; who are hence called *men of the gown*, or *gownmen*.

The gown is an ample ſort of garment, worn over the ordinary cloaths, hanging down to the feet.—It is faſhioned differently for eccleſiaſtics and for laymen.

At Rome they gave the name "virile gown," *toga virilis*, to a plain kind of gown which their youth aſſumed when arrived at puberty. This they particularly denominated *prætexta*. See TOGA, PRÆTEXTA, &c.

Hiſtory of Mancheſter, i. 302.

"The remarkable dreſs of our Britiſh anceſtors (Mr Whitaker obſerves) which continued very nearly the ſame to the commencement of the laſt century among the natives of Ireland, and has actually deſcended to the preſent among the mountaineers of Scotland, and is therefore rendered very familiar to our ideas, carried in it an aſtoniſhing appearance to the Romans. And it ſeems to have been equally the dreſs of the men and women among the nobles of Britain. But in a few years after the erection of the Roman-Britiſh towns in the north, and in the progreſs of refinement among them, this ancient habit began to be diſeſteemed by the chiefs of the cities, and looked upon as the badge of ancient barbariſm. And the growing prejudices were ſoon ſo greatly improved, that within 20 years only after the conſtruction of the towns, the Britiſh ſagum was actually reſigned, and the Roman *toga* or gown aſſumed by many of them.

"The gown, however, never became univerſal in Britain: and it ſeems to have been adopted only by the barons of the cities and the officers of the crown; and has therefore been tranſmitted to us as the robe of reverence, the enſign of literature, and the mantle of magiſtracy. The woollen and plaided garments of the chiefs having naturally ſuperſeded the leathern veſtures of their clients, the former were ſtill wore by the generality of the Britons; and they were retained by the gentlemen of the country, and by the commonalty both in country and city. That this was the caſe, appears evident from the correſpondent conduct of the Gauls and Britons; who kept their Virgata Sagula to the laſt, and communicated them to the Franks and Saxons. The plaided drapery of the Britons ſtill appeared general in the ſtreets of Mancheſter; and muſt have formed a ſtriking contraſt to the gown of the chief, the dark mantle of Italy: and it and the ornamented buttons on the ſhoulder are preſerved among us even to the preſent moment, in the parti-coloured cloathing and the taſſelled ſhoulder-knots of our footmen."

In ſome univerſities phyſicians wear a ſcarlet gown. In the Sorbonne, the doctors are always in gowns and caps. Beadles, &c. wear gowns of two or more colours.

Among the French officers, &c. they diſtinguiſh thoſe of the *ſhort gown* or *robe*; which are ſuch as have not been regularly examined. They have alſo barbers of the *ſhort gown*, who are ſuch as are obliged to practiſe in an inferior way to thoſe of the long robe.

GOWN is alſo taken in the general for civil magiſtrature, or the profeſſion oppoſite to that of arms. In this ſenſe it was that Cicero ſaid *cedant arma togæ*.

GOWRAN, a borough, fair, and poſt town, in the county of Kilkenny and province of Leinſter, Ireland. N. Lat. 52. 34. W. Long. 7. 0. It is governed by a portrieve, recorder, and town clerk. Here are the ruins of an old church, alſo the handſome ſeat of the late Lord Clifden; and three miles beyond Gowran the ruins of Ballinabola caſtle.

GOYEN (John Van), painter of landſcapes, cattle, and ſea-pieces, was born at Leyden in 1596; and was for ſome time inſtructed by Iſaac Nicholai, who was reputed a good painter; but afterwards he became the diſciple of Eſaias Vandervelde, the moſt celebrated landſcape painter of his time. Van Goyen very ſoon roſe into general eſteem; and his works are more univerſally ſpread through all Europe than the works of any other maſter, for he poſſeſſed an uncommon readineſs of hand and freedom of pencil. It was his conſtant pleaſure and practice to ſketch the views of villages and towns ſituated on the banks of rivers or canals; of the ſea-ports in the Low Countries; and ſometimes of inland villages, where the ſcenes around them appeared to him pleaſing or pictureſque. Thoſe he afterwards uſed as ſubjects for his future landſcapes; enriching them with cattle, boats, and figures in character, juſt as the livelineſs of his imagination directed. He underſtood perſpective extremely well, and alſo the principles of the chairo-ſcuro; which branches of knowledge enabled him to give his pictures a ſtrong and agreeable effect. He died in 1656, aged 60.—His uſual ſubjects were ſea pieces, or landſcapes with views of rivers, enlivened with figures of peaſants either ferrying over cattle, drawing their nets in ſtill water, or going to or returning from market. Sometimes he repreſented huts of boors on the banks of rivers, with overhanging trees, and a beautiful reflection of their branches from the tranſparent ſurface of the waters. Theſe were the ſubjects of his beſt time, which he generally marked with his name and the year; and the high finiſhed pictures of Van Goyen will be for ever eſtimable. But as he painted abundance of pictures, ſome are ſlight, ſome too yellow, and ſome negligently finiſhed; though all of them have merit, being marked with a free, expeditious, and eaſy pencil, and a light touch. His pictures frequently have a greyiſh caſt; which did not ariſe from any miſmanagement of the tints, or any want of the ſkill in laying on the colours; but was occaſioned by his uſing a colour called *Haerlem blue*, much approved of at that time, though now entirely diſſuſed, becauſe the artiſts found it apt to fade into that greyiſh tint; and it hath alſo rendered the pictures of this maſter exceedingly difficult to be cleaned without injuring the finer touches of the finiſhing. His beſt works are valued ſo highly in moſt parts of Europe, and eſpecially in the Low Countries, that they deſervedly afford large prices, being ranked in Holland with the pictures of Teniers; and at this time are not eaſily procured, particularly if they are undamaged, though his ſlighter performances are ſufficiently common.

GRAAF (Regnier de), a celebrated phyſician, born at Schoonhaven, in Holland, in 1641. He ſtudied phyſic at Pruſſia. He was educated in Leyden, where he acquired great honour by publiſhing a treatiſe *De Succo Pancreatico*. He alſo publiſhed three pieces upon the organs of generation, both male and female; upon which ſubject he had a controverſy with Swammerdam. He died young, in 1673; and his works, with his life prefixed, were publiſhed at Leyden in 1677, in 8vo.

GRABE (John Erneſt), a very learned writer in the beginning of the 18th century, a native of Koningſberg in Pruſſia. He was educated in the Lutheran religion; but the reading of the fathers led him into doubts. He preſented to the electoral conſiſtory at Sambia in Pruſſia a memorial containing his doubts. The elector gave orders to three eminent divines to anſwer them. Their anſwers ſhook him a little in his reſolution of embracing the Roman Catholic Religion; and one of them, Spener, adviſed him to go to England. He went; and king William gave him a penſion, which was continued by queen Anne. He was ordained a prieſt of the church of England, and honoured with the degree of doctor of divinity by the univerſity of Oxford; upon which occaſion Dr George Smalridge pronounced two Latin orations which were afterwards printed. He wrote, 1. *Spicelegium S. S. Patrum, ut et Hereticorum ſæculi poſt Chriſtum natum*, 8vo. 2. An edition of the Septuagint, from the Alexandrian manuſcript in St James's library. 3. Notes on Juſtin, &c.; and other works, which are eſteemed by the learned.

GRACCHUS (Tiberius), elected tribune of the Roman people demanded in the ſenate, in their name, the execution of the Agrarian law; by which all perſons poſſeſſing above 200 acres of land were to be deprived of the ſurplus, for the benefit of the poor citizens, amongſt whom an equal diſtribution of them was to be made. Having carried his plan into execution by violent meaſures, he fell a victim to his zeal, being aſſaſſinated by his own party, 133 B.C. Caius his brother purſuing the ſame ſteps, was killed by the conſul Opimius, 121 B. C. See (hiſtory of) ROME.

GRACE, among divines, is taken, 1. For the free love and favour of God, which is the ſpring and ſource of all the benefits we receive from him. 2. For the work of the Spirit renewing the ſoul after the image of God; and continually guiding and ſtrengthening the believer to obey his will, to reſiſt and mortify ſin, and overcome it.

GRACE is alſo uſed, in a peculiar ſenſe, for a ſhort prayer ſaid before and after meat.

The proofs of the moral obligation of this ceremony, drawn from different paſſages of the New Teſtament, are ſo well known, that it is needleſs to inſiſt on them here. Some others, drawn from the practice of different nations, and of very remote antiquity, may not be diſagreeable to our readers.

1. Athenæus tells us, in his *Deipnoſoph.* lib. ii. that in the famous regulation made by Amphictyon king of Athens with reſpect to the uſe of wine, both in ſacrifices and at home, he required that the name of *Jupiter the Suſtainer* ſhould be decently and reverently pronounced. The ſame writer, in lib. iv. p. 149. quotes Hermeias, an author extant in his time, who informs us of a people in Egypt, inhabitants of the city of Naucratis, whoſe cuſtom it was on certain occaſions, after they had placed themſelves in the uſual poſture of eating at the table, to riſe again and kneel; when the prieſt or precentor to the ſolemnity began to chant a grace, according to a ſtated form amongſt them; and when that was over, they joined in the meal in a ſolemn ſacrificial manner. Heliodorus has a paſſage in his *Æthiopics* to the ſame purpoſe, that is

was the cuſtom of the Egyptian philoſophers to pour out libations and put up ejaculations before they ſat down to meals. Porphyry, in his treatiſe *De abſtin.* lib. iv. p. 408. gives a great character of the Samnean gymnoſophiſts in Egypt for the ſtrictneſs of their life: as one article in their favour, he obſerves, that at the ſounding of a bell before their meals, which conſiſted only of rice, bread, fruits, and herbs, they went to prayers; which being ended, and not before, the bell ſounded again, and they ſat down to eating. In general this was a religious uſage or rite amongſt the ancient Greeks; and derived from yet older ages, if Clement of Alexandria rightly informs us. He mentions, that theſe people, when they met together to refreſh themſelves with the juice of the grape, ſung a piece of muſic, in imitation of the Hebrew Pſalms, which they called a *ſcholion*. Livy, lib. xxxix. ſpeaks of it as a ſettled cuſtom among the old Romans, that they offered ſacrifice and prayer to the gods at their meals and compotations. But one of the fulleſt teſtimonies to our purpoſe is given by Quintilian, *Declam.* 301. *Adiſti menſam*, ſays he, *ad quam cum venire cœpimus, Deos invocamus;* "We approached the table (at ſupper together), and then invoked the gods."

The Jeſuit Trigautius, in his very elegant and inſtructive narrative of the Chriſtian expedition of their miſſionaries into China, book i. p. 69. gives this account of the people there in the particular now under conſideration. "Before they place themſelves for partaking of an entertainment, the perſon who makes it ſets a veſſel, either of gold, or ſilver, or marble, or ſome ſuch valuable material, in a charger full of wine, which he holds with both his hands, and then makes a low bow to the perſon of chief quality or character at the table. Then, from the hall or dining-room, he goes into the porch or entry, where he again makes a very low bow, and turning his face to the ſouth, pours out this wine upon the ground as a thankful oblation to the Lord of heaven. After this, repeating his reverential obeiſance, he returns into the hall," &c.

The Turks pray for a bleſſing on their meat; and many more inſtances might be produced of infidels who have conſtantly obſerved the like cuſtom in ſome way or other.

2. The fact, therefore, with reſpect to the heathen world, being thus evident, we proceed to the ſentiments and behaviour of the Jews in this particular. Their celebrated hiſtorian Joſephus, giving a detail of the rites and cuſtoms of the Eſſenes, who were confeſſedly the ſtricteſt and moſt pious profeſſors of the Jewiſh religion, has this remarkable paſſage to the preſent purpoſe: "The prieſt," ſays he, "begs a bleſſing before they preſume to take any nouriſhment; and it is looked upon as a great ſin to take or taſte before." Then follows the thankſgiving before meat: and "when the meal," proceeds he, "is over, the prieſt prays again; and the company with him bleſs and praiſe God as their preſerver, and the donor of their life and nouriſhment."

Philo, in his book *De vita Contemplativa*, gives an account of a body of men and women ſtricter than even the Eſſenes themſelves. He diſtinguiſhes them by no particular name, though his relation is very accurate and circumſtantial; namely, that on certain ſpecial occaſions, before "they took their meals, they placed themſelves in a proper decent order; when, lifting up their hands and eyes to heaven, they prayed to God that he would be pleaſed to be propitious to them in the uſe of theſe his good creatures."

From the Hebrew ritual it appears, that the Jews had their hymns and pſalms of thankſgiving, not only after eating their paſſover, but on a variety of other occaſions, at and after meals, and even between their ſeveral courſes and diſhes; as when the beſt of their wine was brought upon the table, or their aromatic confections, or the fruit of the garden, &c. On the day of the paſſover was ſung Pſalm cxiv. "When Iſrael came out of Egypt," &c.

Ariſtæus has a paſſage full on the preſent ſubject. "Moſes," ſays he, "commands, that when the Jews are going to eat or drink, the company ſhould immediately join in ſacrifice or prayer." Where Rabbi Eleazar (upon that author) met with this ſentence, has been controverted. But ſuppoſing it not to be found *in ſcriptis*, it is ſufficient for us to know that the Jews did conſtantly practiſe this cuſtom, upon the foundation of an ancient and general tradition and uſage. That the prophet Daniel gave thanks before meat, is evident from the Apocryphal book concerning Bel and the Dragon, where, ver. 38, 39, we find, that "Daniel ſaid, Thou haſt remembered me, O God! neither haſt thou forſaken them who ſeek thee and love thee. So Daniel aroſe, and did eat." Of this text Prudentius takes notice in Cathemirin, hymn iv.

His ſumptis Danielis excitavit
In cœlum faciem, ciboque fortis
Amen reddidit, allelujah dixit.

The much-beloved took the repaſt,
And up to heav'n his eyes he caſt;
By which refreſh'd, he ſung aloud,
Amen and Allelujah to his God.

Where, by the way, it may be obſerved, that the poet is a little miſtaken in making the prophet give thanks after meat; whereas, according to the text, he did it before.

GRACE, or *gracefulneſs*, in the human character; an agreeable attribute, inſeparable from motion as oppoſed to reſt, and as comprehending ſpeech, looks, geſture, and loco-motion.

As ſome motions are homely, the oppoſite to graceful; it is to be inquired, With what motions is this attribute connected? No man appears graceful in a maſk; and therefore, laying aſide the expreſſions of the countenance, the other motions may be genteel, may be elegant, but of themſelves never are graceful. A motion adjuſted in the moſt perfect manner to anſwer its end, is elegant; but ſtill ſomewhat more is required to complete our idea of grace or gracefulneſs.

What this unknown *more* may be, is the nice point. One thing is clear from what is ſaid, that this *more* muſt ariſe from the expreſſions of the countenance: and from what expreſſions ſo naturally as from thoſe which indicate mental qualities, ſuch as ſweetneſs, benevolence, elevation, dignity? This promiſes to be a fair analyſis; becauſe of all objects mental qualities affect us the moſt; and the impreſſion made by graceful appearance upon every ſpectator of taſte, is too deep for any cauſe purely corporeal.

The next ſtep is, to examine what are the mental qualities, that, in conjunction with elegance of motion, produce a graceful appearance. Sweetneſs, cheerfulneſs, affability, are not ſeparately ſufficient, nor even in conjunction. Dignity alone, with elegant motion, produce a graceful appearance, but ſtill more graceful with the aid of other qualities, thoſe eſpecially that are the moſt exalted. See **Dignity**.

But this is not all. The moſt exalted virtues may be the lot of a perſon whoſe countenance has little expreſſion: ſuch a perſon cannot be graceful. Therefore to produce this appearance, we muſt add another circumſtance, viz. an expreſſive countenance, diſplaying to every ſpectator of taſte, with life and energy, every thing that paſſes in the mind.

Collecting theſe circumſtances together, grace may be defined "that agreeable appearance which ariſes from elegance of motion and from a countenance expreſſive of dignity." Expreſſions of other mental qualities are not eſſential to that appearance, but they heighten it greatly.

Of all external objects, a graceful perſon is the moſt agreeable.

Dancing affords great opportunity for diſplaying grace, and haranguing ſtill more. See **Dancing**, **Declamation**, and **Oratory**.

But in vain will a perſon attempt to be graceful who is deficient in amiable qualities. A man, it is true, may form an idea of qualities he is deſtitute of, and, by means of that idea, may endeavour to expreſs theſe qualities by looks and geſtures: but ſuch ſtudied expreſſion will be too faint and obſcure to be graceful.

Act of **Grace**, the appellation given to the act of parliament 1696, c. 32. which allows priſoners for civil debts to be ſet at liberty, upon making oath that they have not wherewithal to ſupport themſelves in priſon, unleſs they are alimented by the creditors on whoſe diligences they were impriſoned, within ten days after intimation made for that purpoſe.

Days of **Grace**, three days immediately following the term of payment of a bill, within which the creditor muſt proteſt if payment is not obtained, in order to intitle him to recourſe againſt the drawer.

Grace is alſo a title of dignity given to dukes, archbiſhops, and in Germany to barons and other inferior princes.

GRACES, **Gratiæ**, *Charites*, in the heathen theology, were fabulous deities, three in number, who attended on Venus. Their names are, Aglia, Thalia, and Euphroſyne; i.e. ſhining, flouriſhing, and gay; or, according to ſome authors, Paſithea, Euphroſyne, and Ægiale. They were ſuppoſed by ſome to be the daughters of Jupiter and Eurynome the daughter of Oceanus; and by others, to be the daughters of Bacchus and Venus.

Some will have the Graces to have been four; and make them the ſame with the *Horæ* "hours," or rather with the four ſeaſons of the year. A marble in the king of Pruſſia's cabinet repreſents the three Graces in the uſual manner, with a fourth ſeated and covered with a large veil, with the words underneath, *Ad Sorores* IIII. But this groupe we may underſtand to be the three Graces, and Venus, who was their ſiſter, as being daughter of Jupiter and Dione.

The Graces are always ſuppoſed to have hold of each other's hands, and never parted. They were painted naked, to ſhow that the Graces borrow nothing from art, and that they have no other beauties than what are natural.

Yet in the firſt ages they were not repreſented naked, as appears from Pauſanias, lib. vi. and lib. ix. who deſcribes their temples and ſtatues. They were of wood, all but their head, feet, and hands, which were white marble. Their robe or gown was gilt; one of them held in her hand a roſe, another a dye, and the the third a ſprig of myrtle.

GRACILIS, a muſcle of the leg, thus called from its ſlender ſhape. See **Anatomy**, *Table of the Muſcles*.

Plate CCXXII.

GRACULA, the **Grakle**, in ornithology, a genus belonging to the order picæ. The bill is convex, cultrated, and bare at the point; the tongue is not cloven, but is fleſhy and ſharpiſh; it has three toes before and one behind. 1. The religioſa, leſſer grakle, or Indian ſtare, is about the ſize of a blackbird, the bill an inch and a half long, and of an orange colour. The general colour of the plumage is black, gloſſed with violet, purple, and green, in different reflections of light; on the quills is a bar of white: the feathers and legs are orange yellow, and the claws of a pale brown. The ſpecies, which is found in ſeveral parts of the Eaſt Indies, in the Iſle of Hanian, and almoſt every iſle beyond the Ganges, is remarkable for whiſtling, ſinging, and talking well, much better than any of the parrot genus, and in particular very diſtinct. Its food is of the vegetable kind. Thoſe kept in this climate are obſerved to be very fond of cherries and grapes: if cherries are offered to one, and it does not immediately get them, it cries and whines like a young child, till it has obtained its deſire. It is a very tame and familiar bird. 2. The barita, or boat-tailed grakle, is about the ſize of a cuckow. The bill is ſharp, black, and an inch and a half in length; the general colour of the plumage is black, with a gloſs of purple, eſpecially on the upper parts; the legs and claws are black, the latter hooked. There is a ſingularity in the folding up of the tail-feathers, which, inſtead of forming a plain ſurface at top, ſink into a hollow like a deep gutter. It always carries its tail expanded when on the ground, folding it up in the above ſingular manner only when perched or flying. It inhabits Jamaica; and it feeds on maize, beetles, and other inſects, as well as on the fruit of the banana. It is likewiſe common in North America, keeping company with the flocks of the maize thieves, and red winged oriole. Theſe breed in the ſwamps, and migrate in September, after which none are ſeen. 3. The quiſcula, purple-jackdaw, or Barbadoes blackbird, is about the ſize of a blackbird; the whole bird is black, but moſt beautifully and richly gloſſed with purple, eſpecially on the head and neck. The female is wholly of a brown colour, deepeſt on the wings and tail. This ſpecies inhabits Carolina, Mexico, and other parts of North America, alſo Jamaica. Theſe birds for the moſt part feed on maize, whence the name of *maize thieves* has been given them; but this is not their only food, for they are known alſo to feed on many other things. In ſpring, ſoon after the maize ſeed is put into the ground, they ſcratch it up again; and as ſoon as the leaf comes out, they take it up with their bills, root and all; but when it is ripe they do ſtill more damage, for at that time they come in troops of thouſands, and are ſo bold, that if diſturbed in one part of a field they only go to another. In New Jerſey and Pennſylvania three pence per dozen was once given for the dead birds, and by means of this premium they were nearly extirpated in 1750; when the perſecution of them was abated on account of the great increaſe of worms which had taken place in the meadows, and which in the preceding year had left ſo little hay in New England as to occaſion an importation from other parts. The grakles were therefore again tolerated, as it was obſerved that they fed on theſe worms till the maize was ripe. Theſe birds build in trees. They are ſaid to paſs the winter in ſwamps, which are quite overgrown with wood, from thence only appearing in mild weather; and after the maize is got in, are content to feed on other things, as the aquatic tare-graſs, and if preſſed by hunger, buck-wheat and oats, &c. they are ſaid alſo to deſtroy that pernicious inſect the bruchus piſi. Their note is pretty and agreeable; but their fleſh is not good to eat. 4. The criſtatella, or Chineſe ſtarling, is a little bigger than a blackbird. The bill is yellow or orange; and the general colour of the plumage blackiſh, with a tinge of blue: the legs are of a dull yellow. Theſe birds, which are ſaid to talk and whiſtle very well, are common in China, where they are very much eſteemed, and the figures of them are ſeen frequently in Chineſe paintings. Their food is rice, inſects, worms, and ſuch like. They are ſeldom brought to England alive, requiring the greateſt care in the paſſage.—There are eight other ſpecies of Gracula.

GRACULUS, in ornithology. See CORVUS.

GRADATION, in general, the aſcending ſtep by ſtep, or in a regular and uniform manner.

GRADATION, in logic, a form of reaſoning, otherwiſe called SORITES.

GRADATION, in painting, a gradual and inſenſible change of colour, by the diminution of the teints and ſhades.

GRADATION, in rhetoric, the ſame with CLIMAX.

GRADISKA, a ſtrong town of Hungary in Sclavonia, on the frontiers of Croatia, taken by the Turks in 1691. It is ſeated on the river Save, in E. Long. 17. 55. N. Lat. 45. 38.

GRADISKA, a ſtrong town of Italy, in a ſmall iſland of the ſame name on the frontiers of Friuli, in E. Long. 13. 37. N. Lat. 46. 6. It is ſubject to the houſe of Auſtria.

GRADO, a ſtrong town of Italy, in a ſmall iſland of the ſame name, on the coaſt of Friuli, and in the territory of Venice. E. Long. 13. 35. N. Lat. 45. 52.

GRADUATE, a perſon who has taken a degree in the univerſity. See DEGREE.

GRÆVIUS (John George), one of the moſt learned writers in the 17th century. In the 24th year of his age, the elector of Brandenburg made him profeſſor at Doiſbourg. In 1658, he was invited to Deventer to ſucceed his former maſter Gronovius. In 1661, he was appointed profeſſor of eloquence at Utrecht; and 12 years after he had the profeſſorſhip of politics and hiſtory conferred on him. He fixed his thoughts here, and refuſed ſeveral advantageous offers. He had, however, the ſatisfaction to be ſought after by divers princes, and to ſee ſeveral of them come from Germany to ſtudy under him. He died in 1703, aged 71. His *Theſaurus antiquitatum et hiſtoriarum Italiæ*, &c. and other works, are well known.

GRAFTING, or ENGRAFTING, in gardening, is the taking a ſhoot from one tree, and inſerting it into another, in ſuch a manner that both may unite cloſely and become one tree. By the ancient writers on huſbandry and gardening, this operation is called *inciſion*, to diſtinguiſh it from inoculation or budding, which they call *inſerere oculos*.

Grafting hath been practiſed from the moſt remote antiquity; but its origin and invention is differently related by naturaliſts. Theophraſtus tells us, that a bird having ſwallowed a fruit whole, caſt it forth into a cleft or cavity of a rotten tree; where mixing with ſome of the putrified parts of the wood, and being waſhed with the rains, it budded, and produced within this tree another tree of a different kind. This led the huſbandman to certain reflections, from which ſoon afterwards aroſe the art of engrafting.

Pliny ſets the ſame thing in a different light: a countryman having a mind to make a palliſade in his grounds, that it might endure the longer, he bethought himſelf to fill up and ſtrengthen the bottom of the palliſade, by running or wattling it with the trunks of ivy. The effect of this was, that the ſtakes of the palliſades taking root, became engrafted into the trunks, and produced large trees; which ſuggeſted to the huſbandman the art of engrafting.

The uſe of grafting is to propagate any curious ſorts of fruits ſo as to be certain of the kinds; which cannot be done by any other method: for as all the good fruits have been accidentally obtained from ſeeds, ſo the ſeeds of theſe, when ſown, will many of them degenerate, and produce ſuch fruit as is not worth the cultivating: but when ſhoots are taken from ſuch trees as produce good fruit, theſe will never alter from their kind, whatever be their ſtock or tree on which they are grafted.

The reaſon or philoſophy of engrafting is ſomewhat obſcure; and had not accident given the firſt hint, all our knowledge of nature would never have led us to it. The effect is ordinarily attributed to the diverſity of the pores or ducts of the graft from thoſe of the ſtock, which change the figure of the particles of the juices in paſſing through them to the reſt of the tree.

Mr Bradley, on occaſion of ſome obſervations of Agricola, ſuggeſts ſomething new on this head. The ſtock grafted on, he thinks, is only to be conſidered as a fund of vegetable matter, which is to be filtered through the cyon, and digeſted, and brought to maturity, as the time of growth in the veſſels of the cyon directs. A cyon, therefore, of one kind, grafted on a tree of another, may be rather ſaid to take root in the tree it is grafted in, than to unite itſelf with it: for it is viſible that the cyon preſerves its natural purity and intent, though it be fed and nouriſhed with a mere crab; which is, without doubt, occaſioned by the difference of the veſſels in the cyon from thoſe of the ſtock: ſo that grafting may be juſtly compared to planting.

In proſecution of this view of that ingenious author, we add, that the natural juices of the earth, by their ſecration and comminution in paſſing through the roots, &c. before they arrive at the cyon, muſt doubtleſs arrive there half elaborated and concocted; and ſo diſpoſed for a more eaſy, plentiful, and perfect aſſimilation and nutrition; whence the cyon muſt neceſſarily grow and thrive better and faſter than if it were put immediately in the ground, there to live on coarſe diet and harder of digeſtion: and the fruit produced by this further preparation in the cyon, muſt be finer and further exalted than if fed immediately from the more imperfectly prepared and altered juices of the ſtock.

Many have talked of changing of ſpecies, or producing mixed fruits, by engrafting one tree on another of the ſame claſs; but as the graft carries the juices from the ſtock to the pulp of the fruit, there is little hope of ſucceeding in ſuch an expectation by ever ſo many repeated grafts: but if, after changing the graft and ſtock ſeveral ſucceſſive times, you ſet the ſeed of the fruit produced on the graft in a good mould, it is poſſible that a change may happen, and a new mixed plant may be produced. Thus the almond and peach may, by many changes in the graftings, and by interrations of the ſtones of the peaches, and of the ſhells of the almonds, and by teribrations of the ſtem of the root here and there, alter their nature ſo much, that the coat or pulp of the almond may approach to the nature of the peach, and the peach may have its kernel enlarged into a kind of almond; and on the ſame principle, the curious gardener may produce many ſuch mixed kinds of things.

Mr Du Hamel has obſerved, that, in grafting of trees, there is always found at the inſertion of the graft, a change in the directions of fibres, and a ſort of twiſting or turning about of the veſſels, which greatly imitates that in the formation of certain glands in animal bodies: and from thence he infers, that a new ſort of viſcus being formed by this means, the fruit may very naturally be ſo far influenced by it, as to be meliorated on the new branch; but that no ſuch ſudden and eſſential changes can be effected by thoſe means, as too many of the writers on agriculture pretend. He obſerves, however, that this anatomical obſervation would not have been ſufficient to convince him of the falſity of too many of theſe relations, had not experiment joined to confirm him in this opinion. He tried many grafts on different trees; and, for fear of error, repeated every experiment of conſequence ſeveral times: but all ſerved only to convince him of the truth of what he at firſt ſuſpected. He grafted in the common way the peach upon the almond, the plum upon the appricot, the pear upon the apple, the quince, and the white thorn; one ſpecies of plum on other very different ſpecies, and upon the peach, the apricot and the almond. All theſe ſucceeded alike: the ſpecies of the fruit was never altered; and in thoſe which would not come to fruit, the leaves, the wood, and the flowers, were all the ſame with thoſe of the tree from whence the graft was taken.

Authors on agriculture have alſo mentioned a very different ſort of grafting; namely, the ſetting grafts of one tree upon ſtocks of a different genus; ſuch as the grafting the pear upon the oak, the elm, the maple, or the plum, &c. Mr Du Hamel tried a great number of thoſe experiments carefully, and found every one of them unſucceſsful; and the natural concluſion from this was, that there muſt be ſome natural alliance between the ſtocks and their grafts, otherwiſe the latter will either never grow at all or very ſoon periſh.

Notwithſtanding the facility with which grafts generally take on good ſtocks, there are many accidents and uncertainties attending them in their different periods. Some periſh immediately; ſome, after appearing healthy for many months, and ſome even for years. Of theſe laſt ſome die without the ſtock ſuffering any thing; others periſh together with the ſtocks. It is very certain, that the greater part of grafted trees do not live ſo long as they would have done in their natural ſtate; yet this is no unexceptionable rule: for there are ſome which evidently live the longer for this practice; nay, there are inſtances of grafts which, being placed on ſtocks naturally of ſhort duration, live longer than when placed on thoſe which are more robuſt and laſting. Theſe irregularities have been but little conſidered hitherto, though they might be made productive of conſiderable advantages.—One great requiſite for the ſucceeding of any graft is, that it be in its own nature capable of ſo cloſe and intimate an union with the ſubſtance of the ſtock, that it becomes as it were a natural branch of it. If all trees reſembled one another in their ſtructure and juices, the ſize and elaſticity of their veſſels, &c. probably the grafts of all trees would ſucceed upon one another; but this is by no means the caſe.

Trees are well known to be compoſed of numerous arrangements of hollow fibres, and theſe are different and unequal in every ſpecies of tree. In order to the ſucceeding of a graft, it is plain that there muſt be a conformity in its veſſels and juices with thoſe of the ſtock; and the more nearly they agree in this, probably the better they ſucceed; and the farther they differ, the worſe.—If there be, however, ſome difference in the ſolid parts of trees, there are evidently many more in the juices. The ſap in ſome trees is white as milk, in others it is reddiſh, and in ſome as clear and limpid as water. In ſome, it is thin and very fluid; in others, thick and viſcous. In the taſte and ſmell of the juices there are alſo not leſs differences: ſome are ſweet, ſome inſipid, ſome bitter, ſome acrid, and ſome fetid: the quality of the ſap thus makes a very great difference in the nature of trees; but its quantity, and derivation to the parts, is ſcarce leſs obſerveable. Of this we have familiar inſtances in the willow and the box; one of which will produce longer ſhoots in one year than the other in twenty.

Another difference yet more ſtriking, and indeed more eſſential in regard to the growth of grafts than all theſe, is the different ſeaſon of the year at which trees ſhoot out their leaves, or ripen their flowers. The almond-tree is in flower before other trees in general have opened their earlieſt buds; and when other trees are in flower, this is full of leaves, and has its fruit ſet before the mulberry begins to puſh out its earlieſt buttons. When we conſider all theſe differences in trees, we cannot but wonder how it is poſſible for a branch of one to live upon another; and it becomes a much more perplexing queſtion how any graft can ſucceed, than how ſuch numbers come to miſcarry. A graft of one pear upon another ſhall be ſeen to ſucceed preſently as if upon its own tree; and in a fortnight will gain ſix inches in length, and ſo of ſome others.—This muſt be owing to the great ſimilarity between the ſtock and the graft in all reſpects; and a great contrariety or difference in ſtructure of parts will make as remarkable a difference on the other hand. An inſtance of this may be obſerved in the plum and the elm; which no art can ever make to ſucceed upon one another, whether the plum be grafted on the elm, or the elm upon the plum ſtock. Theſe are examples of the extremes of eaſy growth, and of abſolute decay; but there are many conjunctions of trees which ſeem of a middle nature between the two, and neither immediately periſh, nor totally ſucceed. Of theſe, ſuch as were grafted in autumn uſually remain green the whole winter without puſhing; and thoſe which are grafted in ſpring remain green a month or longer, but ſtill without ſhooting. Some particular ones have alſo been known to make a few ſhoots the firſt, or even the ſecond ſap ſeaſon after the operation; but all periſh at the end of theſe times. Of this kind are the grafts of the pear-tree upon the elm, the maple, and the hornbeam, and the mulberry upon the elm and fig, with many others.

When we come to inquire into the cauſe of this, we find that theſe grafts, though unnatural, have yet had a communication with the ſtock by means of a few ſmall veſſels, which has been ſufficient to keep them green, or even to make them ſhoot a little, during the great aſcent of the ſap: But the far greater number of the fibres have had all the while no communication, and are found putrified, dried up, or covered with a putrid juice. This has evidently happened by means of the diſproportion in ſize between the veſſels of the ſtock and of the graft, and the great difference between their natural juices, which are obſtacles abundantly ſufficient to prevent either an union of the fibres or the introduction of new ſap.

The grafts of the almond on the plum, and of the plum on the almond, always grow very vigorouſly for the firſt year, and give all the appearances imaginable of ſucceeding entirely; yet they always periſh in the ſecond or third year. The almond graft upon the plum-ſtock always puſhes out very vigorouſly at firſt; but the part of the ſtock immediately under the graft grows ſmaller and periſhes, the graft abſorbing too much of the juices, and the graft neceſſarily periſhes with it. The decay of the whole generally happens early in the ſpring: and that plainly from the different ſeaſon of the natural ſhooting of the two trees, the almond puſhing very vigorouſly, and conſequently draining the ſtock of its juices, at a time when, according to its nature, the juices are but in ſmall quantity in it, and the ſap does not begin to aſcend. The grafts of the plum on the almond are, from the ſame cauſe, furniſhed with an abundance of ſap which they have at that time no occaſion for; and conſequently they as certainly periſh of repletion, as the other of inanition.

The peach grafted on the plum ſucceeds excellently, and lives longer than it would have done in a natural ſtate; the reaſon ſeems to be, that the peach is a tender tree, ſhoots with great vivacity, and produces more branches than the root is able to maintain. Thus the peach trees are uſually full of dead wood; and often their large branches periſh, and ſometimes their whole trunk. On this occaſion the plum, being a ſlow ſhooting tree, communicates its virtue to the graft; and the peach conſequently ſends out ſhoots which are more robuſt and ſtrong, and are no more in number than the root is able to ſupply with nouriſhment, and conſequently the tree is the more laſting.

The grafts, or cyons, with which the grafting is effected, are young ſhoots of laſt ſummer's growth, for they muſt not be more than one year, and ſuch as grow on the outſide branches, and robuſt but moderate ſhooters; ſuch alſo as are firm and well ripened, ſhould always be choſen from healthful trees: obſerving, that the middle part of each ſhoot is always the beſt graft, cut at the time of grafting to five or ſix inches in length, or ſo as to have four or five good eyes or buds; but ſhould be preſerved at full length till grafting time, and then prepared as hereafter directed.

They ſhould be collected or cut from the trees in February, in mild weather, before their buds begin to ſwell, or advance much for ſhooting: in collecting them, chooſe ſuch as have not made lateral or ſide ſhoots; cut them off at full length; and if they are not to be uſed as ſoon as they are collected, lay their lower ends in ſome dry earth in a warm border till grafting time, and, if ſevere weather ſhould happen, cover them with dry litter.

The proper tools and other materials uſed in grafting, are, 1. A ſtrong knife for cutting off the heads of the ſtocks, previous to the inſertion of the graft; alſo a ſmall hand-ſaw for occaſional uſe in cutting off the heads of large ſtocks. 2. A common grafting-knife, or ſtrong ſharp pen-knife, for cutting and ſhaping the grafts ready for inſertion; alſo to ſlope and form the ſtocks for the reception of the grafts. 3. A flat grafting-chiſel and ſmall mallet for clefting large ſtocks, in cleft-grafting, for the reception of the graft. 4. A quantity of new baſs-ſtrings for bandages, for tying the grafted parts cloſe, to ſecure the grafts, and promote their ſpeedy union with the ſtock. And, 5. A quantity of grafting clay, for claying cloſely round the grafts after their inſertion and binding, to defend the parts from being dried by the ſun and winds, or too much liquified by wet, or pinched by cold; for theſe parts ought to be cloſely ſurrounded with a coat of clay in ſuch a manner as effectually to guard them from all weathers, which would prove injurious to young grafts, and deſtroy their cementing property, ſo as to prevent the junction: therefore, a kind of ſtiff loamy mortar muſt be prepared of ſtrong fat loam, or, in default thereof, any ſort of tough binding clay, either of which ſhould be laid in an heap, adding thereto about a fourth of freſh horſe-dung free from litter, and a portion of cut hay, mixing the whole well together, and adding a little water: then let the whole be well beaten with a ſtick upon a floor, or other hard ſubſtance; and as it becomes too dry, apply more water, at every beating turning it over, always continuing to beat it well at top till it becomes flat; which muſt be repeated more or leſs according to the nature of the clay, but ſhould be ſeveral times done the firſt day: next morning repeat the beating, ſtill moiſtening it with water; and by thus repeating the beating ſix or eight times every day for two or three days, or every other day at leaſt, for a week, it will be in proper

per order for uſe; obſerving, it ſhould be prepared a week at leaſt before it is uſed, but if a month, the better.

The ſeaſon for performing the operation of grafting is February and March: though, when the work is performed in February, it for the general part proves the moſt ſucceſsful, more eſpecially for cherries, plumbs, and pears; and March grafting is well adapted for apples.

There are different methods of grafting in practice, termed Whip-grafting—Cleft-grafting—Crown-grafting—Cheek-grafting—Side-grafting—Root-grafting—and Grafting by approach or Inarching: but Whip-grafting and Cleft-grafting are moſt commonly uſed; and Whip-grafting moſt of all, as being the moſt expeditious and ſucceſsful of any.

Whip-grafting.—This being the moſt ſucceſsful method of grafting is the moſt commonly practiſed in all the nurſeries; it is always performed upon ſmall ſtocks, from about the ſize of a gooſe-quill to half an inch or a little more or leſs in diameter, but the nearer the ſtock and graft approach in ſize the better; and is called *whip-grafting*, becauſe the grafts and ſtocks being nearly of a ſize, are ſloped on one ſide, ſo as to fit each other, and tied together in the manner of whips, or joints of angling rods, &c. and the method is as follows. Having the cyons or grafts, knife, bandages, and clay ready, then begin the work by cutting off the head of the ſtock at ſome clear ſmooth part thereof; this done, cut one ſide ſloping upward, about an inch and half or near two inches in length, and make a notch or ſmall ſlit near the upper part of the ſlope downward about half an inch long, to receive the tongue of the cyon; then prepare the cyon, cutting it to five or ſix inches in length, forming the lower end alſo in a ſloping manner, ſo as exactly to fit the ſloped part of the ſtock, as if cut from the ſame place, that the rinds of both may join evenly in every part; and make a ſlit ſo as to form a ſort of tongue to fit the ſlit made in the ſlope of the ſtock; then place the graft, inſerting the tongue of it into the ſlit of the ſtock, applying the parts as evenly and cloſe as poſſible; and immediately tie the parts cloſe together with a ſtring of baſs, bringing it in a neat manner ſeveral times round the ſtock and graft; then clay the whole over near an inch thick on every ſide, from about half an inch or more below the bottom of the graft, to an inch over the top of the ſtock, finiſhing the whole coat of clay in a kind of oval globular form, rather longwiſe, up and down, cloſing it effectually about the cyon, and every part, ſo as no ſun, wind, nor wet may penetrate, to prevent which is the whole intention of claying; obſerving to examine it now and then, to ſee if it any where cracks or falls off, and if it does it muſt be inſtantly repaired with freſh clay. This ſort of grafting may alſo be performed, if neceſſary, upon the young ſhoots of any bearing tree, if intended to alter the ſorts of fruits, or have more than one ſort on the ſame tree. By the middle or latter end of May, the grafts will be well united with the ſtock, as will be evident by the ſhooting of the graft; then the clay ſhould be wholly taken away; but ſuffer the baſs bandage to remain ſome time longer until the united parts ſeem to ſwell and be too much confined by the ligature, then take the tying wholly off. Their farther culture is directed under the reſpective articles, whether deſigned for dwarfs or ſtandards, &c.

Mawe's Dict. of Gardening.

Cleft-grafting.—This is ſo called, becauſe the ſtock being too large for whip-grafting is cleft or ſlit down the middle for the reception of the graft; and is performed upon ſtocks from about one to two inches diameter. Firſt, with a ſtrong knife cut off the head of the ſtock; or if the ſtock is very large, it may be headed with a ſaw; and cut one ſide ſloping upwards about an inch and half to the top; then proceed with a ſtrong knife or chiſel, to cleave the ſtock at top, croſs-way the ſlope, fixing the knife or chiſel towards the back of the ſlope, and with your mallet ſtrike it, ſo as to cleave the ſtock about two inches, or long enough to admit the graft, keeping it open open with the chiſel; this done, prepare the cyon, cutting it to ſuch length as to leave four or five eyes, the lower part of which being ſloped on each ſide, wedge-faſhion, an inch and half or two inches long, making one ſide to a thin edge, the other much thicker, leaving the rind thereon, which ſide muſt be placed outward in the ſtock; the cyon being thus formed, and the cleft in the ſtock being made and kept open with the chiſel, place the graft therein at the back of the ſtock the thickeſt ſide outward, placing the whole cut part down into the cleft of the ſtock, making the rind of the ſtock and graft join exactly; then removing the grafting chiſel, each ſide of the cleft will cloſely ſqueeze the graft, ſo as to hold it faſt; it is then to be bound with a ligature of baſs, and clayed over, as obſerved in whip-grafting, leaving three or four eyes of the cyons uncovered. If intended to graft any pretty large ſtocks or branches by this method, two or more grafts may be inſerted in each; in this caſe the head muſt be cut off horizontally, making no ſlope on the ſide, but ſmooth the top, then cleave it quite acroſs, and place a graft on each ſide, as the ſtock may be cleft in two places, and inſert two grafts in each cleft; they are thus to be tied and clayed as in the other methods. This method of grafting may be performed upon the branches of bearing trees, when intended either to renew the wood or change the ſort of fruit. Towards the latter end of May, or the beginning of June, the junction of the graft and ſtock in either method will be effectually formed, and the graft begin to ſhoot, when the clay may be taken off, and in a fortnight or three weeks after take off alſo the bandages.

Crown-Grafting.—This kind of grafting is commonly practiſed upon ſuch ſtocks as are too large to cleave, and is often performed upon the large branches of apple and pear trees, &c. that already bear fruit, when it is intended to change the ſorts, or renew the tree with freſh-bearing wood. It is termed *crown-grafting*, becauſe the ſtock or branch being headed down, ſeveral grafts are inſerted at top all around betwixt the wood and bark, ſo as to give it a crown-like appearance: obſerving, that this kind of grafting ſhould not be performed until March or early in April; for then the ſap being in motion, renders the bark and wood of the ſtock much eaſier to be ſeparated for the admiſſion of the graft.---The manner of performing this ſort of grafting is as follows: Firſt, cut off the head of the ſtock or branch with a ſaw horizontally, and pare the top ſmooth, then having the grafts, cut one ſide of each flat, and ſomewhat ſloping, an inch and a half, forming a ſort of ſhoulder at top of the ſlope to reſt upon the crown of the ſtock; and then raiſing the rind of the ſtock with a wedge, ſo as to admit the cyon between that and the wood two inches down, place the grafts with the flat ſide next the wood, thruſting it down far enough for the ſhoulder to reſt upon the top of the ſtock; and in this manner may be put three, four, five, or more grafts in one large ſtock or branch. When the grafts are all thus inſerted, let the whole be tied tight and well clayed: obſerving to leave two or three eyes of each graft uncovered, but raiſing the clay an inch above the top of the ſtock, ſo as to throw the wet quickly off, without lodging about the grafted parts, which would ruin the whole work. Crown-grafting may alſo be performed, by making ſeveral clefts in the crown of the ſtock, and inſerting the grafts round the top of the clefts. The grafts will be pretty well united with the ſtock, and exhibit a ſtate of growth, by the end of May or beginning of June, and the clay may then be taken away. The trees grafted by this method will ſucceed extremely well; but, for the firſt two or three years, have this inconvenience attending them, of being liable to be blown out of the ſtock by violent winds; which muſt be remedied by tying long ſticks to the body of the ſtock or branch, and each graft tied upon one of the ſticks.

Cheek-grafting.—Cut the head of the ſtock off, horizontally, and pare the top ſmooth; then cut one ſide ſloping an inch and half or two inches deep, and cut the lower part of the graft ſloping the ſame length, making a ſort of ſhoulder at top of the ſloped part; it is then to be placed upon the ſloped part of the ſtock, reſting the ſhoulder upon the crown of it; bind it with baſs, and finiſh with a covering of clay as in the other methods.

Side-grafting.—This is done by inſerting grafts into the ſides of the branches without heading them down; and may be practiſed upon trees to fill up any vacancy, or for the purpoſe of variety, to have ſeveral ſorts of apples, pears, plums, &c. upon the ſame tree. It is performed thus. Fix upon ſuch parts of the branches where wood is wanted to furniſh the head or any part of the tree; there ſlope off the bark and a little of the wood, and cut the lower end of the grafts to fit the part as near as poſſible; then join them to the branch, and tie them with baſs and clay them over.

Root-grafting—This is done by whip-grafting cyons upon pieces of the root of any tree of the ſame genus, and planting the root where it is to remain; it will take root, draw nouriſhment, and feed the graft.

Grafting by approach, or Inarching.—This ſort of grafting is, when the ſtocks deſigned to be grafted, and the tree from which you intend to take the graft, either grow ſo near, or can be placed ſo near together, that the branch or graft may be made approach the ſtock, without ſeparating it from the tree, till after its union or junction with the ſtock; ſo that the branch or graft being bent to the ſtock, they together form a ſort of arch; whence it is called Grafting by Approach, or Inarching. Being a ſure method, it is commonly practiſed upon ſuch trees as are with difficulty made to ſucceed by any of the former ways of grafting. When intended to propagate any kind of tree or ſhrub by this method of grafting, if the tree, &c. is of the hardy kind, and growing in the full ground, a proper quantity of young plants for ſtocks muſt be ſet round it; and when grown of a proper height, the work of inarching muſt be performed; or, if the branches of the tree you deſign to graft from is too high for the ſtocks, in that caſe ſtocks muſt be planted in pots, and a ſlight ſtage muſt be erected around the tree, of due height to reach the branches, and the pots containing the ſtocks muſt be placed upon the ſtage. As to the method of performing the work: Obſerve, that in this method of grafting, it is ſometimes performed with the head of the ſtock cut off, and ſometimes with the head left on till the graft is united with the ſtock; though by previouſly heading the ſtock, the work is much eaſier performed; and having no top, its whole effort will be directed to the nouriſhment of the graft; having, however, the ſtocks properly placed, either planted in the ground, or in pots around the tree to be propagated; then make the moſt convenient branches approach the ſtock, and mark on the body of the branches the parts where they will moſt eaſily join to the ſtock, and in thoſe parts of each branch pare away the bark and part of the wood two or three inches in length, and in the ſame manner pare the ſtock in the proper place for the junction of the graft; then make a ſlit upwards in the branch, ſo as to form a ſort of tongue, and make a ſlit downwards in the ſtock to admit it; let the parts be then joined, ſlipping the tongue of the graft into the ſlit of the ſtock, making the whole join in an exact manner, and tie them cloſely together with baſs, and afterwards cover the whole with a due quantity of clay, as before directed in the other methods. After this, let a ſtout ſtake be fixed, if poſſible, for the ſupport of each graft; to which let that part of the ſtock and graft be faſtened, which is neceſſary to prevent their being disjoined by the wind. The operation being performed in ſpring, let them remain in that poſition about four months, when they will be united, and the graft may then be ſeparated from the mother-tree. In doing this, be careful to perform it with a ſteady hand, ſo as not too looſen or break out the graft, ſloping it off downwards cloſe to the ſtock; and if the head of the ſtock was not cut down at the time of grafting, it muſt now be done cloſe to the graft, and all the old clay and bandage muſt alſo be cleared away, and replaced with new, to remain a few weeks longer. Obſerve, however, that if you ſhall think the grafts are not firmly united with the ſtock in the period of time abovementioned, let them remain another year till autumn, before you ſeparate the grafts from the parent-tree. By this kind of grafting, you may raiſe almoſt any kind of tree or ſhrub, which is often done by way of curioſity, to ingraft a fruit-bearing branch of a fruit-tree upon any common ſtock of the ſame fraternity or genus, whereby a new tree bearing fruit is raiſed in few months. This is ſometimes practiſed upon orange and lemon trees, &c. by grafting bearing-branches upon ſtocks raiſed from the kernels of any of the ſame kind of fruit, or into branches of each other, ſo as to have oranges, lemons, and citrons, all on the ſame tree.

An anonymous author has given us in a treatiſe, publiſhed at Hamburgh, under the title *Amœnitates Hortenſes Novæ*, a new method of grafting trees, ſo as to have very beautiful pyramids of fruit upon them, which will exceed in beauty, flavour, and quantity, all that can be otherwiſe produced. This, he ſays, he had long experienced, and gives the following method of doing it. The trees are to be tranſplanted in autumn, and all their branches cut off. Early in the following ſummer the young ſhoots are to be pulled off, and the buds are then to be ingrafted into them in an inverted direction. This, he ſays, adds not only to the beauty of the pyramids, but alſo makes the branches more fruitful. Theſe are to be cloſely connected to the trunk, and to be faſtened in with the common ligature: they are to be placed circularly round the tree, three buds in each circle, and theſe circles at ſix inches diſtance from one another. The old trees may be grafted in this manner, the ſucceſs having been found very good in thoſe of twenty years ſtanding; but the moſt eligible trees are thoſe which are young, vigorous, and full of juice, and are not above a finger or two thick. When theſe young trees are tranſplanted, they muſt be fenced round with pales to defend them from the violence of the wind; and there muſt be no dung put to them till they are thoroughly rooted, for fear of rotting them before the fibres ſtrike. The buds ingrafted muſt be ſmall, that the wounds made in the bark to receive them, not being very large, may heal the ſooner; and if the buds do not ſucceed, which will be perceived in a fortnight, there muſt be others put in their place. The wound made to receive theſe buds muſt be a ſtraight cut, parallel to the horizon; and the piece of bark taken out muſt be downward, that the rain may not get in at the wound. In the autumn of the ſame year, this will be a green and flouriſhing pyramid; and the next ſummer it will flower, and ripen its fruit in autumn.

GRAHAM (James), Marquis of Montroſe, was comparable to the greateſt heroes of antiquity. He undertook, againſt almoſt every obſtacle that could terrify a leſs enterpriſing genius, to reduce the kingdom of Scotland to the obedience of the king; and his ſucceſs was anſwerable to the greatneſs of the undertaking. By valour, he in a few months almoſt effectuated his deſign; but, for want of ſupplies, was forced to abandon his conqueſts. After the death of Charles I. he, with a few men, made a ſecond attempt, but was immediately defeated by a numerous army. As he was leaving the kingdom in diſguiſe, he was betrayed into the hands of his enemy, by the Lord Aſton, his intimate friend. He was carried to his execution with every circumſtance of indignity that wanton cruelty could invent; and hanged upon a gibbet 30 feet high, with the book of his exploits appended to his neck. He bore this reverſe of fortune with his uſual greatneſs of mind, and expreſſed a juſt ſcorn at the rage and the inſult of his enemies. We meet with many inſtances of valour in this active reign; but Montroſe is the only inſtance of heroiſm. He was executed May 21ſt, 1650. See BRITAIN, n° 137, 138, 143, 165.

GRAHAM (Sir Richard), lord viſcount Preſton, eldeſt ſon of Sir George Graham of Netherby, in Cumberland, Bart. was born in 1648. He was ſent ambaſſador by Charles II. to Louis XIV. and was maſter of the wardrobe and ſecretary of ſtate under James II. But when the Revolution took place, he was tried and condemned, on an accuſation of attempting the reſtoration of that prince; though he obtained a pardon by the queen's interceſſion. He ſpent the remainder of his days in retirement, and publiſhed an elegant tranſlation of "Boethius on the conſolation of philoſophy." He died in 1695.

GRAHAM (George), clock and watch maker, the moſt ingenious and accurate artiſt in his time, was born in 1675. After his apprenticeſhip, Mr Tompion received him into his family, purely on account of his merit; and treated him with a kind of parental affection as long as he lived. Beſide his univerſally acknowledged ſkill in his profeſſion, he was a complete mechanic and aſtronomer; the great mural arch in the obſervatory at Greenwich was made for Dr Halley, under his immediate inſpection, and divided by his own hand: and from this incomparable original, the beſt foreign inſtruments of the kind are copies made by Engliſh artiſts. The ſector by which Dr Bradley firſt diſcovered two new motions in the fixed ſtars, was of his invention and fabric: and when the French academicians were ſent to the north to aſcertain the figure of the earth, Mr Graham was thought the fitteſt perſon in Europe to ſupply them with inſtruments; thoſe who went to the ſouth were not ſo well furniſhed. He was for many years a member of the Royal Society, to which he communicated ſeveral ingenious and important diſcoveries; and regarded the advancement of ſcience more than the accumulation of wealth. He died in 1751.

GRAHAM's Dyke. See *ANTONINUS's Wall.*

GRAIN, corn of all ſorts, as barley, oats, rye, &c. See CORN, WHEAT, &c.

GRAIN is alſo the name of a ſmall weight, the twentieth part of a ſcruple in apothecaries weight, and the twenty-fourth of a penny-weight troy.

A grain-weight of gold-bullion is worth two-pence, and that of ſilver but half a farthing ſterling.

GRAIN alſo denotes the component particles of ſtones and metals, the veins of wood, &c. Hence croſs-grained, or againſt the grain, means contrary to the fibres, of wood, &c.

GRAIN (Baptiſt le), maſter of the requeſts in ordinary to Mary de Medicis queen of France's houſehold, wrote *The Hiſtory of Henry the Great*, and of *Louis XIII.* from the beginning of his reign to the death of the marſhal d'Ancre in 1617. This hiſtory is reckoned to be written with impartiality, and the ſpirit of a true patriot; and contains many things not to be found any where elſe. He vigorouſly aſſerts the edict that had been granted to the reformed.

GRALLÆ, in ornithology, is an order of birds analogous to the *bruta* in the claſs of *mammalia*, in the Linnæan ſyſtem. See ZOOLOGY and ORNITHOLOGY.

GRAMINA, GRASSES; one of the ſeven tribes or natural families, into which all vegetables are diſtributed by Linnæus in his *Philoſophia Botanica.* They are defined to be plants which have very ſimple leaves, a jointed ſtem, a huſky calyx termed *gluma*, and a ſingle ſeed. This deſcription includes the ſeveral ſorts of corn as well as graſſes. In Tournefort they conſtitute a part of the fifteenth claſs, termed *apetali*; and in Linnæus's ſexual method, they are moſtly contained in the ſecond order of the third claſs, called *triandria digynia.*

This numerous and natural family of the graſſes has engaged the attention and reſearches of ſeveral eminent botaniſts. The principal of theſe are, Ray, Monti, Micheli, and Linnæus.

M. Monti, in his *Catalogus ſtirpium agri Bononienſis gramina ac hujus modi affinia complectens*, printed at Bononia in 1719, divides the graſſes from the diſpoſition of their flowers, as, Theophraſtus and Ray had divided them before him into three ſections or orders. Theſe are, 1. Graſſes having flowers collected in a ſpike. 2. Graſſes having their flowers collected in a panicle or looſe ſpike. 3. Plants that in their habit and external appearance are allied to the graſſes.

This claſs would have been natural if the author had not improperly introduced ſweet-ruſh, juncus, and arrow-headed graſs, into the third ſection. Monti enumerates about 306 ſpecies of the graſſes, which he reduces under Tournefort's genera; to theſe he has added three new genera.

Scheuchzer, in his *Ariſtographia*, publiſhed likewiſe in 1719, divides the graſſes, as Monti, from the diſpoſition of their flowers, into the five following ſections: 1. Graſſes with flowers in a ſpike, as phalaris, anthoxanthum, and frumentum. 2. Irregular graſſes, as ſchœnanthus and cornucopiæ. 3. Graſſes with flowers growing in a ſimple panicle or looſe ſpike, as reed and millet. 4. Graſſes with flowers growing in a compound panicle, or diffuſed ſpike, as oats and poa. 5. Plants by their habit nearly allied to the graſſes, as cypreſs-graſs, ſcirpus, linagroſtis, ruſh, and ſcheuchzeria.

Scheuchzer has enumerated about four hundred ſpecies, which he deſcribes with amazing exactneſs.

Micheli has divided the graſſes into ſix ſections, which contain in all 44 genera, and are arranged from the ſituation and number of the flowers.

GRAMINA, the name of the fourth order in Linnæus's Fragments of a Natural Method, conſiſting of the numerous and natural family of the graſſes, *viz.* agroſtis, aira, alopecurus or fox-tail graſs, anthoxanthum or vernal graſs, ariſtida arundo or reed, avena or oats, bobartia, briza, bromus, cinna, cornucopiæ or horn of plenty graſs, cynoſurus, dactylis, elymus, feſtuca or feſcue-graſs, hordeum or barley, lagurus or hare's-tail graſs, lolium or darnel, lygeum or hooded matweed, melica, mileum or millet, nardus, oryza or rice, panicum or panic-graſs, paſpalum, phalaris, or canary-graſs, phleum, poa, ſaccharum or ſugar-cane, ſecale or rye, ſtipa or winged ſpike-graſs, triticum or wheat, uniola or ſea-ſide oats of Carolina, coix or Job's tears, olyra, pharus, tripſacum, zea, Indian Turkey wheat or Indian corn, zizania, ægilops or wild feſcue-graſs, and ropogon, apluda, cenchrus, holcus or Indian millet, iſchæmum. See BOTANY, p. 458, col. 2. and GRASSES.

GRAMMAR.

1
Definition.

1. GRAMMAR *is the art of ſpeaking or of writing any language with propriety*; and the purpoſe of *language* is to communicate our *thoughts*.

2
Grammar particular,

2. Grammar, conſidered as an *art*, neceſſarily ſuppoſes the previous exiſtence of language; and as its deſign is to teach any language to thoſe who are ignorant of it, it muſt be adapted to the genius of that particular language of which it treats. A juſt method of grammar, therefore, without attempting any alterations in a language already introduced, furniſhes certain obſervations called *rules*, to which the methods of ſpeaking uſed in that language may be reduced; and this collection of rules is called *the grammar* of that particular language. For the greater diſtinctneſs with regard to theſe rules, grammarians have uſually divided this ſubject into four diſtinct heads, *viz.* ORTHOGRAPHY, or *the art of combining letters into ſyllables, and ſyllables into words*; ETYMOLOGY, *or the art of deducing one word from another, and the various modifications by which the ſenſe of any word can be diverſified conſiſtently with its original meaning or its relation to the theme whence it is derived*; SYNTAX, or what relates to *the conſtruction or due diſpoſition of the words of a language into ſentences or phraſes*; and PROSODY, or that which treats of *the quantities and accents of ſyllables, and the art of making verſes*.

3
Or univerſal.

3. But grammar, conſidered as a *ſcience*, views language only as it is ſignificant of *thought*. Neglecting particular and arbitrary modifications introduced for the ſake of beauty or elegance, it examines the analogy and relation between *words* and *ideas*; diſtinguiſhes between thoſe particulars which are *eſſential* to language and thoſe which are only *accidental*; and thus furniſhes a certain ſtandard, by which different languages may be compared, and their ſeveral excellencies or defects pointed out. This is what is called PHILOSOPHIC or

UNIVERSAL GRAMMAR.

4
The deſign of ſpeech.

4. THE origin of language is a ſubject which has employed much learned inveſtigation, and about which there is ſtill a diverſity of opinion. The deſign of ſpeech is to communicate to others the thoughts and perceptions of the mind of the ſpeaker: but it is obvious, that between an internal idea and any external ſound there is no natural relation; that the word *fire*, for inſtance, might have denominated the ſubſtance which we call *ice*, and that the word *ice* might have ſignified *fire*. Some of the moſt acute feelings of man, as well as of every other animal, are indeed expreſſed by ſimple inarticulate ſounds, which as they tend to the preſervation of the individual or the continuance of the ſpecies, and invariably indicate either pain or pleaſure, are univerſally underſtood: but theſe inarticulate and ſignificant ſounds are very few in number; and if they can with any propriety be ſaid to conſtitute a natural and univerſal language, it is a language of which man as a mere ſenſitive being partakes in common with other animals.

5 Language conſiſts of words ſignificant of ideas.

5. Man is endowed not only with *ſenſation*, but alſo with the faculty of *reaſoning*; and ſimple inarticulate ſounds are inſufficient for expreſſing all the various modifications of thought, for communicating to others a chain of argumentation, or even for diſtinguiſhing between the different ſenſations either of pain or of pleaſure: a man ſcorched with fire or unexpectedly plunged among ice, might utter the cry naturally indicative of ſudden and violent pain; the cry would be the ſame, or nearly the ſame, but the ſenſations of cold and heat are widely different. *Articulation*, by which thoſe ſimple ſounds are modified, and a particular meaning fixed to each modification, is therefore abſolutely neceſſary to ſuch a being as man, and forms the language which diſtinguiſhes him from all other animals, and enables him to communicate with facility all that diverſity of ideas with which his mind is ſtored, to make known his particular wants, and to diſtinguiſh with accuracy all his various ſenſations. Thoſe ſounds thus modified are called WORDS; and as words have confeſſedly no *natural* relation to the ideas and perceptions of which they are ſignificant, the uſe of them muſt either have been the reſult of human ſagacity, or have been ſuggeſted to the firſt man by the Author of nature.

6. Whether language be of divine or human origin, is a queſtion upon which, though it might perhaps be ſoon reſolved, it is not neceſſary here to enter. Upon either ſuppoſition, the firſt language, compared with thoſe which ſucceeded it, or even with itſelf as afterwards enlarged, muſt have been extremely rude and narrow. If it was of *human* contrivance, this will be readily granted; for what art was ever invented and brought to a ſtate of perfection by illiterate ſavages? If it was taught by GOD, which is at leaſt the more probable ſuppoſition, we cannot imagine that it would be more comprehenſive than the ideas of thoſe for whoſe immediate uſe it was intended; that the firſt men ſhould have been taught to expreſs pains or pleaſures which they never felt, or utter ſounds that ſhould be afterwards ſignificant of ideas which at the time of utterance had not occurred to the mind of the ſpeaker: man, taught the elements of language, would be able himſelf to improve and enlarge it as his future occaſions ſhould require.

7. As all language is compoſed of ſignificant *words* variouſly combined, a knowledge of them is neceſſary previous to our acquiring an adequate idea of language as conſtructed into ſentences and phraſes. But as it is by words that we expreſs the various *ideas* which occur to the mind, it is neceſſary to examine how ideas themſelves are ſuggeſted, before we can aſcertain the various claſſes into which words may be diſtributed. It is the province of *logic* to trace our ideas from their origin, as well as to teach the art of reaſoning: but it is neceſſary at preſent to obſerve, that our earlieſt ideas are all ideas of ſenſation, excited by the impreſſions that are made upon our organs of ſenſe by the various objects with which we are ſurrounded. Let us therefore ſuppoſe a reaſonable being, devoid of every poſſible prepoſſeſſion, placed upon this globe; and it is obvious, that his attention would in the firſt place be directed to the various objects which he ſaw exiſting around him. Theſe he would naturally endeavour to diſtinguiſh from one another; and if he were either learning or inventing a language, his firſt effort would be to give them *names*, by means of which the ideas of them might be recalled when the objects themſelves ſhould be abſent. This is one copious ſource of words; and forms a natural claſs which muſt be common to *every* language, and which is diſtinguiſhed by the name of NOUNS: and as theſe nouns are the names of the ſeveral ſubſtances which exiſt, they have likewiſe been called SUBSTANTIVES.

6 Origin of ideas.

7 Of nouns.

8 Of attributives.

8. It would likewiſe be early diſcovered, that every one of theſe ſubſtances was endowed with certain qualities or attributes; to expreſs which another claſs of words would be requiſite, ſince it is only by their qualities that ſubſtances themſelves can attract our attention. Thus, *to be weighty*, is a quality of matter; *to think*, is an attribute of man. Therefore in every language words have been invented to expreſs the known qualities or attributes of the ſeveral objects which exiſt. Theſe may all be comprehended under the general denomination of ATTRIBUTIVES.

9. NOUNS and ATTRIBUTIVES muſt comprehend all that is *eſſential* to language (A); for every thing which exiſts, or of which we can form an idea, muſt be either a *ſubſtance* or the *attribute* of ſome ſubſtance; and therefore thoſe two claſſes which denominate ſubſtances and attributes, muſt comprehend all the words that are *neceſſary* to communicate to the hearer the ideas which are preſent to the mind of the ſpeaker. If any other words occur, they can only have been invented for the ſake of diſpatch, or introduced for the purpoſes of eaſe and ornament, to avoid tedious circumlocutions or diſagreeable tautologies. There are indeed grammarians of great name, who have conſidered as eſſential to language an order of words, of which the uſe is to connect the nouns and attributives, and which are ſaid to have *no ſignification of themſelves*, but to become *ſignificant by relation*. Hence all words which can poſſibly be invented are by theſe men divided into two general claſſes: thoſe which are SIGNIFICANT OF THEMSELVES and thoſe which are NOT. Words ſignificant of themſelves are either expreſſive of the names of ſubſtances, and therefore called SUBSTANTIVES; or

of

(A) This is the doctrine of many writers on the theory of language, for whoſe judgment we have the higheſt reſpect: yet it is not eaſy to conceive mankind ſo far advanced in the art of abſtraction as to view *attributes* by themſelves independent of particular *ſubſtances*, and to give *one general name* to *each attribute* whereſoever it may be found, without having at the ſame words expreſſive of *affirmation*. We never talk of any *attribute*, a *colour* for inſtance, without *affirming* ſomething concerning it; as, either that it is *bright* or *faint*, or that it is the colour of ſome *ſubſtance*. It will be ſeen afterwards, that to denote *affirmation* is the proper office of what is called the ſubſtantive *verb*; as, "Milk is white." That *verb* therefore appears to be as neceſſary to the communication of thought as any ſpecies of words whatever; and if we muſt range words under a few general claſſes we ſhould be inclined to ſay, that *nouns*, *attributives*, and *affirmatives*, comprehend all that is eſſential to language.

of attributes, and therefore called ATTRIBUTIVES. Words which are not ſignificant of themſelves, muſt *acquire* a meaning either as defining or connecting others; and are therefore arranged under the two claſſes of DEFINITIVES and CONNECTIVES.

9 Of definitives and connectives.

10. That in any language there can be words which of themſelves have *no ſignification*, is a ſuppoſition which a man free from prejudice will not readily admit; for to what purpoſe ſhould they have been invented? as they are ſignificant of no ideas, they cannot facilitate the communication of thought, and muſt therefore be only an incumbrance to the language in which they are found. But in anſwer to this it has been ſaid, that theſe words, though devoid of ſignification themſelves, acquire a ſort of meaning when joined with others, and that they are as neceſſary to the ſtructure of a ſentence as cement is to the ſtructure of an edifice: for as *ſtones* cannot be arranged into a regular building without a *cement* to *bind* and *connect* them, ſo the original words ſignificant of *ſubſtances* and *attributes*, cannot be made to expreſs all the variety of our ideas without being *defined* and *connected* by thoſe words which of themſelves ſignify *nothing*.—It is wonderful, that he who firſt ſuggeſted this ſimile did not perceive that it tends to overthrow the doctrine which it is meant to illuſtrate: for ſurely the *cement* is as much the *matter* of the building as the *ſtones* themſelves; it is equally ſolid and equally extended. By being united with the ſtones, it neither acquires nor loſes any one of the qualities *eſſential* to *matter*; it neither communicates its own ſoftneſs, nor acquires their hardneſs. By this mode of reaſoning therefore it would appear, that the words called *definitives* and *connectives*, ſo far from having of themſelves *no* ſignification, are equally eſſential to language and equally ſignificant with thoſe which are denominated *ſubſtantives* and *attributives*; and upon inveſtigation it will be found that this is the truth. For whatever is meant by the *definition* or *connection* of the words which *all men* confeſs to be ſignificant, *that meaning* muſt be the ſenſe of the words of which the purpoſe is to define and connect; and as there can be no *meaning* where there are no *ideas*, every one of theſe *definitives* and *connectives* muſt be ſignificant of *ſome idea*, although it may not be always eaſy or even poſſible to expreſs that idea by another word.

11. Theſe different modes of dividing the parts of ſpeech we have juſt mentioned, becauſe they have been largely treated of by grammarians of high fame. But it does not appear to us, that any man can feel himſelf much the wiſer for having learned that all words are either SUBSTANTIVES or ATTRIBUTIVES, DEFINITIVES or CONNECTIVES. The diviſion of words into thoſe which are SIGNIFICANT OF THEMSELVES, and thoſe which are SIGNIFICANT BY RELATION, is abſolute nonſenſe, and has been productive of much error and much myſtery in ſome of the moſt celebrated treatiſes on grammar. It is indeed probable, that any attempt to eſtabliſh a different claſſification of the parts of ſpeech from that which is commonly received, will be found of little utility either in *practice* or in *ſpeculation*. As far as the *former* is concerned, the vulgar diviſion ſeems ſufficiently commodious; for every man who knows any thing, knows when he uſes a *noun* and when a *verb*. With reſpect to the *latter*, not to mention that all the grammarians from ARISTOTLE to HORNE TOOKE, have differed on the ſubject, it ſhould ſeem to be of more importance, after having aſcertained with preciſion the nature of each ſpecies of words, to determine in what circumſtances they *differ* than in what they *agree*.

10 The common diviſion of the parts of ſpeech the moſt proper.

12. In moſt languages, probably in all cultivated languages, grammarians diſtinguiſh the following parts of ſpeech: *Noun, pronoun, verb, participle, adverb, prepoſition, conjunction.* The *Latin* and *Engliſh* grammarians admit the *interjection* among the parts of ſpeech, although it is confeſſedly not neceſſary to the conſtruction of the ſentence, being only thrown in to expreſs the affection of the ſpeaker; and in the *Greek* and *Engliſh* tongues there is the *article* prefixed to nouns, when they ſignify the common names of *things*, to point them out, and to ſhow how far their ſignification extends. In the method of arrangement commonly followed in grammars, *adjectives* are claſſed with *ſubſtantives*, and both are denominated *nouns*; but it is certain that, when examined philoſophically, an eſſential difference is diſcovered between the *ſubſtantive* and the *adjective*; and therefore ſome writers of eminence when treating of this ſubject, have lately given the following claſſification of words, which we ſhall adopt: The ARTICLE, NOUN, PRONOUN, VERB, PARTICIPLE, ADJECTIVE, ADVERB, PREPOSITION, CONJUNCTION, INTERJECTION. All theſe words are to be found in the *Engliſh* language; and therefore we ſhall examine each claſs, endeavour to aſcertain its preciſe import, and ſhow in what reſpects it differs from every other claſs. It is impoſſible to inveſtigate the principles of grammar without confining the inveſtigation in a great meaſure to ſome particular language from which the illuſtrations muſt be produced; and that we ſhould prefer the *Engliſh* language for this purpoſe can excite no wonder, as it is a preference which to every tongue is due from thoſe by whom it is ſpoken. We truſt, however, that the principles which we ſhall eſtabliſh will be found to apply *univerſally*; and that our inquiry, tho' *principally* illuſtrated from the *Engliſh* language, will be an enquiry into *philoſophical* or *univerſal* grammar.

CHAPTER I.

Of the NOUN *or* SUBSTANTIVE.

11 The noun defined.

13. NOUNS *are all thoſe words by which objects or ſubſtances are denominated, and which diſtinguiſh them from one another, without marking either quantity, quality, action, or relation.* The *ſubſtantive* or *noun* is the *name* of the thing ſpoken of, and in Greek and Latin is called *name*; for it is ονομα in the one, and *nomen* in the other; and if in Engliſh we had called it the *name* rather than the *noun*, the appellation would perhaps have been more proper, as this laſt word being uſed only in *grammar*, is more liable to be miſunderſtood than the other, which is in *conſtant* and *familiar* uſe. That *nouns* or the names of things muſt make a part of every language, and that they muſt have been the words firſt ſuggeſted to the human mind, will not be diſputed. Men could not ſpeak of themſelves or of any thing elſe, without having names for themſelves and the various objects with which they are ſurrounded. Now, as all the objects which exiſt muſt be either in the ſame ſtate in which they were produced by *nature*, or changed from their original ſtate by *art*, or *abſtracted*

12 Different kinds of nouns

ed from ſubſtances by the powers of imagination, and conceived by the mind as having at leaſt the capacity of being characterized by qualities; this naturally ſuggeſts a diviſion of nouns into NATURAL, as *man vegetable, tree,* &c. ARTIFICIAL, as *houſe, ſhip, watch,* &c. and ABSTRACT, as *whiteneſs, motion, temperance,* &c.

13 Nouns general terms.

14. But the diverſity of objects is ſo great, that had *each individual* a *diſtinct* and *proper* name, it would be impoſſible for the moſt tenacious memory, during the courſe of the longeſt life, to retain even the *nouns* of the narroweſt language. It has therefore been found expedient, when a number of things reſemble each other in ſome important particulars, to arrange them all under one *ſpecies*; to which is given a name that belongs equally to the *whole ſpecies*, and to each *individual* comprehended under it. Thus the word *man* denotes a *ſpecies* of animals, and is equally applicable to *every human being*: The word *horſe* denotes another ſpecies of animals, and is equally applicable to every individual of that ſpecies of *quadrupeds*; but it cannot be applied to the ſpecies of *men*, or to any *individual* comprehended under that ſpecies. We find, however, that there are ſome qualities in which *ſeveral* ſpecies reſemble each other; and therefore we refer them to a *higher* order called a *genus*, to which we give a name that is equally applicable to every *ſpecies* and every *individual* comprehended under it. Thus, *men* and *horſes* and all *living things* on earth reſemble each other in this reſpect, that they have *life*. We refer them therefore to the *genus* called *animal*; and this word belongs to every *ſpecies* of animals, and to each *individual animal*. The ſame claſſification is made both of *artificial* and *abſtract* ſubſtances; of each of which there are *genera, ſpecies*, and *individuals*. Thus in *natural* ſubſtances, *animal, vegetable*, and *foſſile*, denote GENERA; *man, horſe, tree, metal*, are SPECIES; and *Alexander, Bucephalus, oak, gold*, are INDIVIDUALS. In *artificial* ſubſtances, *edifice* is a GENUS; *houſe, church, tower*, are SPECIES; and the *Vatican, St Paul's*, and the *Tower of London*, are INDIVIDUALS. In *abſtract* ſubſtances, *motion* and *virtue* are GENERA; *flight* and *temperance* are SPECIES; the *flight of Mahomet* and *temperance in wine* are INDIVIDUALS. By arranging ſubſtances in this manner, and giving a name to each *genus* and *ſpecies*, the *nouns* neceſſary to any language are comparatively few and eaſily acquired: and when we meet with an object unknown to us, we have only to examine it with attention; and comparing it with other objects, to refer it to the *genus* or *ſpecies* which it moſt nearly reſembles. By this contrivance we ſupply the want of a proper name for the *individual*; and ſo far as the reſemblance is complete between it and the *ſpecies* to which it is referred, and of which we have given it the name, we may converſe and reaſon about it without danger of error: whereas had each *individual* in nature a *diſtinct* and *proper* name, words would be innumerable and incomprehenſible; and to employ our labours in language, would be as idle as that ſtudy of numberleſs written ſymbols which has been attributed to the *Chineſe*.

14 The origin of the ſingular and plural numbers.

15. Altho' *nouns* are thus adapted to expreſs not the *individuals* but the *genera* or *ſpecies* into which ſubſtances are claſſed; yet, in ſpeaking of theſe ſubſtances, whether *natural, artificial*, or *abſtract*, all men muſt have occaſion to mention ſometimes *one* of a kind, and ſometimes *more* than one. In every language, therefore, nouns muſt admit of ſome variation in their form, to denote *unity* and *plurality*; and this variation is called *number*. Thus in the Engliſh language, when we ſpeak of a ſingle place of habitation, we call it a *houſe*; but if of more, we call them *houſes*. In the firſt of theſe caſes the noun is ſaid to be in the *ſingular*, in the laſt caſe it is in the *plural*, number. Greek nouns have alſo a *dual* number to expreſs *two* individuals, as have likewiſe ſome Hebrew nouns: but this variation is evidently not eſſential to language; and it is perhaps doubtful whether it ought to be conſidered as an elegance or a deformity.

16. But although number be a natural accident of of nouns, it can only be conſidered as *eſſential* to thoſe which denote genera or ſpecies. Thus we may have occaſion to ſpeak of *one animal* or of *many animals*, of *one man* or of *many men*; and therefore the nouns *animal* and *man* muſt be capable of expreſſing *plurality* as well as *unity*. But this is not the caſe with reſpect to the *proper* names of *individuals*: for we can only ſay *Xenophon, Ariſtotle, Plato*, &c. in the *ſingular*; as, were any one of theſe names to aſſume a *plural* form, it would ceaſe to be the *proper* name of an *individual*, and become the *common* name of a *ſpecies*. Of this, indeed, we have ſome examples in every language. When a proper name is conſidered as a general appellative under which many others are arranged, it is then no longer the name of an *individual* but of a *ſpecies*, and as ſuch admits of a *plural*; as the *Cæſars*, the *Howards*, the *Pelhams*, the *Montagues*, &c. but *Socrates* can never become *plural*, ſo long as we know of *no more* than *one* man of that name. The reaſon of all this will be obvious, if we conſider, that every *genus* may be found whole and entire in each of its *ſpecies*; for *man, horſe*, and *dog*, are each of them an entire and complete *animal*: and every *ſpecies* may be found whole and entire in each of its *individuals*: for *Socrates, Plato*, and *Xenophon*, are each of them completely and entirely a *man*. Hence it is, that every *genus*, though ONE, is multiplied into MANY; and every *ſpecies*, though ONE, is alſo multiplied into MANY, *by reference to thoſe beings which are their ſubordinates*: But as *no individual has any ſuch ſubordinates*, it can never in ſtrictneſs be conſidered as MANY; and ſo, as well in *nature* as in *name*, is truly an INDIVIDUAL which cannot admit of *number*.

15 Of gender.

17. Beſides *number*, another characteriſtic, viſible in ſubſtances, is that of SEX. Every ſubſtance is either *male* or *female*; or *both male and female*; or *neither one nor the other*. So that with reſpect to *ſexes* and their *negation*, *all ſubſtances conceivable* are comprehended under this *fourfold* conſideration, which language would be very imperfect if it could not expreſs. Now the exiſtence of *hermaphrodites* being rare, if not doubtful, and language being framed to anſwer the ordinary occaſions of life, no proviſion is made, in any of the tongues with which we are acquainted, for expreſſing, otherwiſe than by a name made on purpoſe, or by a periphraſis, *duplicity of ſex*. With regard to this great natural characteriſtic, grammarians have made only a threefold diſtinction of nouns: thoſe which denote *males* are ſaid to be of the *maſculine gender*; thoſe which denote *females*, of the *feminine*; and thoſe which denote ſubſtances that admit not of *ſex*, are ſaid to be *neuter* or of *neither gender*. All *animals* have ſex; and therefore the *names* of all animals ſhould have *gender*. But the ſex of all is not equally obvious, nor equally worthy of attention. In thoſe ſpecies that are moſt common, or

of which the *male* and the *female* are, by their *ſize, form, colour*, or other outward circumſtances, *eminently diſtinguiſhed*, the *male* is ſometimes called by *one* name, which is *maſculine*; and the *female* by a *different* name, which is *feminine*. Thus in Engliſh we ſay, *huſband, wife*; *king, queen*; *father, mother*; *ſon, daughter*, &c. In others of ſimilar diſtinction, the name of the *male* is applied to the *female* only by prefixing a ſyllable or by altering the termination; as *man, woman; lion, lioneſs; emperor, empreſs*, anciently *empereſs; maſter, miſtreſs*, anciently *maſtereſs*, &c. When the *ſex* of any animal is not obvious, or not material to be known, the ſame name, in ſome languages, is applied, without variation, to *all* the *ſpecies*, and that name is ſaid to be of the *common gender*. Thus in Latin *bos albus* is a white ox, and *bos alba* a white cow. Diminutive inſects, though they are doubtleſs male and female, ſeem to be conſidered in the Engliſh language as if they were really creeping *things*. No man, ſpeaking of a *worm, would* ſay *he* creeps, but *it* creeps, upon the ground. But although the origin of *genders* is thus clear and obvious; yet the Engliſh is the only language, with which we are acquainted, that deviates not, except in this ſingle inſtance of inſects, from the order of nature. *Greek* and *Latin*, and many of the modern tongues, have nouns, ſome maſculine, ſome feminine, which denote ſubſtances where ſex never had exiſtence. Nay, ſome languages are ſo particularly defective in this reſpect, as to claſs every object, inanimate as well as animate, under either the *maſculine* or the *feminine gender*, as they have no *neuter gender* for thoſe which are of neither ſex. This is the caſe with *Hebrew, French, Italian*, and *Spaniſh*. But the *Engliſh*, ſtrictly following the order of nature, puts every noun which denotes a *male* animal, and no other, in the *maſculine* gender; every name of a *female* animal, in the *feminine*; and every animal whoſe ſex is not *obvious* or *known*, as well as every *inanimate* object whatever, in the neuter gender. And this gives our language an advantage above moſt others in the poetical and rhetorical ſtyle: for when nouns naturally neuter are converted into maſculine and feminine, the *perſonification* is more diſtinctly and more forcibly marked. (See PERSONIFICATION.) Some very learned and ingenious men have endeavoured, by what they call a more ſubtle kind of reaſoning, to diſcern even *in things without ſex* a diſtant analogy to that NATURAL DISTINCTION, and to account for the names of inanimate ſubſtances being, in Greek and Latin, *maſculine* and *feminine*. But ſuch ſpeculations are wholly fanciful; and the principles upon which they proceed are overturned by an appeal to facts. Many of the ſubſtances, that, in one language, have *maſculine names*, have in others names that are *feminine*; which could not be the caſe were this matter regulated by *reaſon* or *nature*. Indeed for this, as well as many other anomalies in language, no other reaſon can be aſſigned than that *cuſtom*——

> Quem penes arbitrium eſt, et jus, et norma, loquendi.

16 Origin of caſes.

18. It has been already obſerved that moſt *nouns* are the names, not of *individuals*, but of whole claſſes of objects termed *genera* and *ſpecies* (B). In claſſing a *number* of *individuals* under one ſpecies, we contemplate only thoſe qualities which appear to be important, and in which the ſeveral individuals are found to agree, abſtracting the mind from the conſideration of all thoſe which appear to be leſs eſſential, and which in one individual may be ſuch as have nothing exactly ſimilar in any other individual upon earth. Thus, in claſſing the *individuals* which are comprehended under the *ſpecies* denominated *horſe*, we pay no regard to their *colour* or their *ſize*; becauſe experience teaches us, that no *particular* colour or ſize is eſſential to that individual living creature, and that there are not perhaps upon earth *two* horſes whoſe colour and ſize are *exactly alike*. But the qualities which in this proceſs we take into view, are the *general ſhape*, the *ſymmetry*, and *proportion* of the *parts*; and in ſhort every thing which appears evidently *eſſential* to the *life* of the *individual* and the *propagation* of the *race*. All theſe qualities are ſtrikingly ſimilar in all the individuals which we call *horſes*, and as ſtrikingly diſſimilar from the correſponding qualities of every *other* individual animal. The colour of a *horſe* is often the ſame with that of an *ox*; but the ſhape of the one animal, the ſymmetry and proportion of his parts, are totally different from thoſe of the other; nor could any man be led to claſs the *two individuals* under the *ſame ſpecies*. It is by a ſimilar proceſs that we aſcend from one *ſpecies* to another, and through all the ſpecies to the higheſt *genus*. In each ſpecies or genus in the aſcending ſeries *fewer particular* qualities are attended to than were conſidered as *eſſential* to the *genus* or *ſpecies* immediately *below it*; and our *conceptions* become more and more *general* as the particular qualities, which are the objects of them, become *fewer* in *number*. The uſe of a *general term*, therefore, can recal to the mind only the common qualities of the *claſs*, the genus or ſpecies which it repreſents. But we have frequent occaſion to ſpeak of *individual* objects. In doing this, we annex to the *general term* certain words ſignificant of *particular qualities*, which diſcriminate the object of which we ſpeak, from every other individual of the claſs to which it belongs, and of which the *general term* is the *common name*. For inſtance, in advertiſing a *thief*, we are obliged to mention his *height, complexion, gait*, and whatever may ſerve to diſtinguiſh him from *all other men*.

The proceſs of the mind in rendering her conceptions *particular*, is indeed exactly the reverſe of that by which ſhe *generalizes* them. For as in the proceſs of *generalization*, ſhe *abſtracts* from her ideas of any number of *ſpecies* certain qualities in which they *differ* from each other, and of the *remaining* qualities in which they *agree*, conſtitutes the firſt *genus* in the *aſcending* ſeries; ſo when ſhe wiſhes to make her conceptions more *particular*, ſhe *annexes* to her idea of any *genus* thoſe qualities or circumſtances which were before abſtracted from it; and the *genus*, with this *annexation*, conſtitutes the firſt *ſpecies* in the *deſcending* ſeries. In like manner, when ſhe wiſhes to deſcend from any *ſpecies* to an *individual*, ſhe has only to *annex* to the idea of the *ſpecies* thoſe *particular* qualities which diſcriminate the *individual intended* from the other individual of the ſame kind.

(B) It is almoſt needleſs to obſerve, that the words *genus* and *ſpecies*, and the phraſes *higher genus* and *lower ſpecies*, are taken here in the *logical* ſenſe; and not as the words *genus, ſpecies, order, claſs*, are often employed by naturaliſts. For a farther account of the mental proceſs of generalization, ſee LOGIC and METAPHYSICS.

This *particularizing* operation of the mind points out the manner of applying the *general terms* of language for the purpoſe of expreſſing *particular ideas*. For as the *mind*, to *limit a general idea*, connects that *idea* with the *idea* of ſome *particular circumſtance*; ſo *language*, as we have already obſerved, in order to limit a general *term*, connects that *term* with the *word* denoting the particular circumſtance. Thus, in order to particularize the *idea* of horſe, the *mind* connects that *general idea* with the *circumſtance*, ſuppoſe, of *whiteneſs*; and in order to particularize the *word* horſe, *language* connects that *word* with the *term white*; and ſo in other inſtances.—*Annexation*, therefore, or the connecting of general words or terms in language, fits it for expreſſing particular conceptions; and this muſt hold alike good in *all languages*. But the methods of *denoting* this *annexation* are various in various tongues. In *Engliſh* and moſt modern languages we commonly uſe for this purpoſe little words, which we have choſen to ſtyle *particles*; and in the *Greek* and *Latin* languages, the *caſes of nouns* anſwer the ſame end.

19. *Caſes*, therefore, though they are *accidents* of *nouns* not *abſolutely neceſſary*, have been often conſidered as ſuch; and they are certainly worthy of our examination, ſince there is perhaps no language in which *ſome* caſes are not to be found, as indeed without *them* or their various *powers* no language could *readily* anſwer the purpoſes of life.

17
Caſes, the marks of annexation

All the *oblique* caſes of nouns (if we accept the vocative) are merely marks of *annexation*; but as the *connections* or *relations* ſubſiſting among *objects* are very various, *ſome* caſes denote *one* kind of relation, and *ſome another*. We ſhall endeavour to inveſtigate the connection which *each* caſe denotes, beginning with the *genitive*.—This is the *moſt general* of *all* the caſes, and gives notice that *ſome* connection indeed ſubſiſts between *two* objects, but does not point out the *particular kind* of connection. *That* we muſt infer, not from the *nature* or termination of the *genitive itſelf*, but from our *previous knowledge* of the *objects connected*. That the *genitive* denotes merely *relation in general*, might be proved by adducing innumerable examples, in which the *relations* expreſſed by this caſe are *different*; but we ſhall content ourſelves with one obſervation, from which the truth of our opinion will appear beyond diſpute. If an expreſſion be uſed in which are, connected by the *genitive* caſe, two words ſignificant of objects between which a *twofold* relation *may* ſubſiſt, it will be found impoſſible, *from the expreſſion*, to determine *which* of theſe two relations is the *true* one, which muſt be gathered wholly from the context. Thus, for example, from the phraſe *injuria regis*, no man can know whether the *injury* mentioned be an injury *ſuffered* or an injury *inflicted* by the king: but if the genitive caſe notified any *particular* relation, no ſuch ambiguity could exiſt. This caſe therefore gives notice, that two objects are, *ſomehow or other* (c), connected, but it marks not the *particular ſort* of connection. Hence it may be tranſlated by our particle *of*, which will be ſeen afterwards to be of a ſignification equally general.

18
The import of the genitive caſe.

19
Of the dative and accuſative caſes.

The *dative* an *accuſative caſes* appear to have nearly the ſame meaning; each of them denoting *appoſition*, or the junction of *one object with another*. Thus when any one ſays, *Comparo Virgilium Homero*, *Homer* and *Virgil* are conceived to be placed *beſide* one another, in order to their being compared; and *this ſort* of connection is denoted by the *dative caſe*. In like manner, when it is ſaid *latus humeros*, *breadth* is conceived as joined *to* or connected *in appoſition with* ſhoulders; and the expreſſion may be tranſlated "broad *at* the ſhoulders."

This *appoſition* of two objects may happen either *without* previous *motion*, or in *conſequence of it*. In the foregoing inſtances *no* motion is *preſuppoſed*; but if one ſay, *Miſit aliquos ſubſidio eorum*, the *appoſition* is there in conſequence of motion. In like manner, when it is ſaid, *Profectus eſt Romam*, his *appoſition* with *Rome* is conceived as the *effect* of his *motion* thither.

From this idea of the *accuſative*, the reaſon is obvious why the object *after* the active verb is often put in that caſe; it is becauſe the action is ſuppoſed to proceed *from* the agent *to* the patient. But the ſame thing happens with reſpect to the *dative caſe*, and for the *ſame reaſon*. Thus, *Antonius læſit Ciceronem*, and *Antonius nocuit Ciceroni*, are expreſſions of the ſame import, and in each the action of *hurting* is conceived as proceeding *from* Antony *to* Cicero; which is finely illuſtrated by the paſſive form of ſuch expreſſions, where the procedure abovementioned is expreſsly marked by the prepoſition *ab*: *Cicero nocetur*, *Cicero læditur* AB *Antonio*. It is therefore not true, that "the *accuſative* is *that caſe*, at leaſt the *only* caſe, which to an efficient nominative and a verb of action ſubjoins either the effect or the paſſive ſubject; nor is the *dative* the only caſe which is formed to expreſs relations tending to itſelf." The only thing *eſſential* to theſe two caſes is to denote the *appoſition* or *junction of one object with another*; and this they do *nearly*, if not altogether, in the *ſame manner*, although from the *cuſtom* of language they may not be indifferently ſubjoined to the ſame verb.

20
Of the ablative caſe.

The Greek language has no *ablative* caſe; but in the Latin, where it is uſed, it denotes *concomitancy*, or that *one thing accompanies another*. From this *concomitancy* we ſometimes draw an *inference*, and ſometimes *not*. For example, when it is ſaid, *Templum clamore petebant*, *clamour* is repreſented as *concomitant* with their going to the temple; and *here* no inference is drawn: but from the phraſe *palleo metu*, although nothing more is *expreſſed* than that paleneſs is a *concomitant* of the fear, yet we inſtantly *infer* that it is alſo the *effect* of it. In moſt inſtances where the *ablative* is uſed, an *inference* is drawn, of which the foundation is ſome *natural* connection obſerved to ſubſiſt between the *objects* thus connected in *language*. When this inference is *not* meant to be drawn, the *prepoſition* is commonly added: as, *interfectus eſt* CUM *gladio*, "he was ſlain with a ſword *about* him;" *interfectus eſt gladio*, "he was ſlain with a ſword as the *inſtrument* of his death."

21
Of the nominative and vocative caſes.

The remaining caſes, which have not been noticed, are the *nominative* and the *vocative*. Theſe are in moſt inſtances alike in termination, which makes it probable that

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(c) The Greek grammarians ſeem to have been aware of the nature of this caſe when they called it πτωσις γενικη, or *the general caſe*: of which name the Latin grammarians evidently miſtook the meaning when they tranſlated it *caſus genitivus*, or the *generative caſe*; a name totally foreign from its nature.

that they were originally *one* and the *ſame* caſe. The foundation of this conjecture will appear from conſidering the *uſe* to which each of theſe caſes is applied. The *nominative* is employed to call up the idea of *any object* in the mind of the hearer. But when a man hears his *own name* mentioned, his attention is inſtantly rouſed, and he is naturally led to *liſten to what is to be ſaid*. Hence, when a man meant particularly to *ſolicit* one's attention, he would naturally pronounce the perſon's *name*; and thus the *nominative* caſe would paſs into a *vocative*, of which the uſe is *always* to *ſolicit attention* (D).

22 The import of the Greek and Latin caſes, commonly expreſſed in Engliſh by prepoſitions.

20. The *Greek* and *Latin* among the *ancient*, and the *German* among the *modern* languages, expreſs different connections or relations of one thing with another by *caſes*. In *Engliſh* this is done for the moſt part by prepoſitions; but the Engliſh, being derived from the ſame origin as the German, that is, from the *Teutonic*, has at leaſt *one* variation of the ſubſtantive to anſwer the ſame purpoſe. For inſtance, the relation of *poſſeſſion*, or *belonging*, is often expreſſed by a different ending of the ſubſtantive, which may be well called a a *caſe*. This caſe anſwers nearly to the *genitive caſe* in Latin; but as *that* is not a denomination ſignificant of the *nature* of the caſe in any language, it may perhaps in Engliſh be more properly called the *poſſeſſive caſe*. Thus, *God's grace*, anciently *Godis grace*, is the grace *belonging to* or in the *poſſeſſion of* God: and may be likewiſe expreſſed by means of the prepoſition: thus, —*the grace of God*.

23 One caſe in Engliſh to denote poſſeſſion.

Although the word *Godis* is as evidently an inflexion of the noun *God* as the word *Dei* is an inflexion of *Deus*, there are grammarians who have denied that in *Engliſh* there is *any* true inflexion of the original noun, and who have ſaid that the noun with the addition of that ſyllable, which we conſider as the *ſign of a caſe*, *ceaſes* to be a *noun*, and becomes a *definitive*; a word which with them is devoid of ſignification. Thus, in the expreſſion *Alexander's houſe*, the word *Alexander's* ſtands not as a *noun*, but as an *article* or *definitive*, ſerving to aſcertain and point out the *individuality* of the houſe. But this is a palpable miſtake: the word *Alexander's* ſerves *not* to point out the *individuality* of the houſe, but to ſhow to whom the houſe *belongs*; and is therefore, beyond diſpute, not an *article* but a *noun* in the *poſſeſſive caſe*. Again, when we ſay *St Peter's* at Rome and *St Paul's* at London, the words *St Peter's* and *St Paul's* are neither *articles*, nor, as has been abſurdly imagined, the proper names of edifices, like the *Rotundo* or the *Circus*; but they are in the *poſſeſſive caſe*, the names of the two apoſtles to whom the churches were *dedicated*, and to whom they are ſuppoſed to *belong*.

But that this, which we have called the *poſſeſſive caſe*, is really *not* ſo, muſt be evident, it is ſaid, becauſe there are certain circumſtances in which it cannot be ſubſtituted for the noun with the prepoſition prefixed. Thus, though a man may ſay, I ſpeak OF *Alexander*, I write OF *Cæſar*, I think OF *Pompey*; he cannot ſay, I ſpeak *Alexander's*, I write *Cæſar's*, or I think *Pompey's*. This is indeed true, but it is nothing to to the purpoſe; for though I may ſay, *Loquor* DE *Alexandro*, *Scribo* DE *Cæſare*, *Cogito* DE *Pompeio*; I cannot ſay, *LOQUOR Alexandri*, *Scribo Cæſaris*, or *Cogito Pompeii*: and therefore all that can be inferred from this argument is, that as the *Latin genitive* is not always of the ſame import with the prepoſition *de*, ſo the Engliſh *poſſeſſive* is not *always* of the ſame import with the prepoſition *of*. Upon the whole, then, we may conclude, that Engliſh nouns admit of one inflexion; and that though *caſes* are not ſo eſſential to nouns as gender and number, no language can be wholly without them or their various powers.

CHAPTER II.

Of ARTICLES *or* DEFINITIVES.

21. THE intention of language is to communicate thought, or to expreſs thoſe ideas which are ſuggeſted to us by our ſenſes external and internal. The ideas *firſt* ſuggeſted to us are thoſe of pain and pleaſure, and of the objects with which we are ſurrounded; and therefore the words *firſt* learned muſt be *nouns*, or the names of objects natural, artificial, and abſtract. Every object about which the human mind can be converſant is ſtrictly and properly ſpeaking *particular*; for all things in nature differ from one another in numberleſs reſpects, which, not to mention the idea of ſeparate exiſtence, ſo circumſtance and *individuate* them, that no one thing can be ſaid to be another. Now the uſe of language being to expreſs our ideas or conceptions of theſe objects, it might naturally be expected that every object ſhould be diſtinguiſhed by a *proper name*. This would indeed be agreeable to the truth of things, but we have already ſeen that it is altogether impracticable. Objects have therefore been claſſed into *genera* and *ſpecies*; and names given, *not* to each *individual*, but to each *genus* and *ſpecies*. By this contrivance of language we are enabled to aſcertain in ſome meaſure any *individual* that may occur, and of which we know not the proper name, only by referring it to the *genus* or *ſpecies* to which it belongs, and calling it by the *general* or *ſpecific* name; but as there is frequent occaſion to diſtinguiſh individuals of the ſame ſpecies from one another, it became neceſſary to fall upon ſome expedient to mark this diſtinction. In many languages *general* and *ſpecific* terms are modified and reſtricted by three orders of words; the ARTICLE, the ADJECTIVE, and the OBLIQUE CASES OF NOUNS. The *caſes* of *nouns* we have already conſidered: the *adjective* will employ our attention afterwards: at preſent our obſervations are confined to the ARTICLE; a word ſo very neceſſary, that without it or ſome equivalent invention, men could not employ *nouns* to any of the purpoſes of life, or indeed communicate their thoughts at all. As the buſineſs of *articles* is to enable us, upon occaſion, to employ *general terms* to denote *particular objects*, they muſt be conſidered, in *combination* with the general terms, as merely *ſubſtitutes* for proper names. They have, however, been commonly called *definitives*; becauſe they ſerve

24 The neceſſity and uſe of the article.

(D) The chief objection to this conjecture, that the *nominative* and *vocative* were originally the *ſame caſe*, is taken from the Latin tongue, in which the nouns of the ſecond declenſion ending in *us* terminate their vocative in *e*. But this is eaſily accounted for. The *s* in ſuch words was often dropt, as appears from the ſcanning of old Latin poetry; and when this was done, the *u* being ſhort, would naturally in pronunciation paſs into *e*, a like ſhort vowel; and thus, in the *vocative* caſe, *e* would in time be written inſtead of *u*.

ſerve to *define and aſcertain any particular object, ſo as to diſtinguiſh it from the other objects of the general claſs to which it belongs*, and, of courſe, *to denote its individuality*. Of words framed for this purpoſe, whether they have by grammarians been termed *articles* or not, we know of no language that is wholly deſtitute. The nature of them may be explained as follows.

22. An object occurs with which, as an *individual*, we are totally unacquainted; it has a head and limbs, and appears to poſſeſs the power of ſelf-motion and ſenſation: we therefore refer it to its proper *ſpecies*, and call it *a dog, a horſe, a lion*, or the like. If it belongs to none of the ſpecies with which we are acquainted, it cannot be called by any of their names; we then refer it to the *genus*, and call it *an animal*.

25
Two articles.

But this is not enough. The object at which we are looking, and which we want to diſtinguiſh, is not a *ſpecies* or a *genus*, but an *individual*. Of what kind? *known* or *unknown?* Seen now *for the firſt time*, or *ſeen before* and now remembered? This is one of the inſtances in which we ſhall diſcover the uſe of the two articles A and THE: for, in the caſe ſuppoſed, the article A reſpects our *primary* perception, and denotes an individual as *unknown*; whereas THE reſpects our *ſecondary* perception, and denotes individuals as *known*. To explain this by an example: I ſee an object paſs by which I never ſaw till now: What do I ſay? *There goes* A *beggar with* A *long beard*. The man departs, and returns a week after: What do I then ſay? *There goes* THE *beggar with* THE *long beard*. Here the article only is changed, the reſt remains unaltered. Yet mark the force of this apparently minute change. The individual *once vague* is now recogniſed as *ſomething known*; and that merely by the efficacy of this latter article, which tacitly inſinuates a kind of *previous* acquaintance, by referring a preſent perception to a like perception already paſt.

This is the explanation of the articles A and THE as given by the learned Mr Harris, and thus far what he ſays on the ſubject is certainly juſt; but it is not true that the article THE *always* inſinuates a *previous* acquaintance, or refers a preſent perception to a like perception already paſt.—I am in a room crowded with company, of which the greater part is to me totally unknown. I feel it difficult to breathe from the groſſneſs of the incloſed atmoſphere; and looking towards the window, I ſee in it a perſon whom I never ſaw before. I inſtantly ſend my compliments to *THE gentleman in the window*, and requeſt, that if it be not inconvenient, he will have the goodneſs to let into the room a little freſh air. Of this gentleman I have no *previous acquaintance*; my preſent perception of him is my *primary* perception, and yet it would have been extremely improper to ſend my compliments, &c. to *A gentleman in the window*.—Again, there would be no impropriety in ſaying—"*A man* whom I ſaw yeſterday exhibiting a ſhow to the rabble, was this morning committed to jail charged with the crime of houſebreaking." Notwithſtanding the authority, therefore, of *Mr Harris* and his maſter *Apollonius*, we may venture to affirm, that it is not *eſſential* to the article A to reſpect a *primary perception*, or to the article THE to indicate a *preeſtabliſhed acquaintance*. Such may indeed be the manner in which theſe words are moſt frequently uſed; but we ſee that there are inſtances in which they may be uſed differently. What then, it may be aſked, is the import of each article, and in what reſpects do they differ?

23. We anſwer, that the articles A and THE are both of them *definitives*, as by being prefixed to the names of *genera* and *ſpecies* they ſo circumſcribe the latitude of thoſe names as to make them for the moſt part denote *individuals*. A *noun* or *ſubſtantive*, without *any article* to limit it, is taken in its wideſt ſenſe. Thus, the word *man* means all mankind;

> "The proper ſtudy of mankind is man:"

where *mankind* and *man* may change places without making any alteration in the ſenſe. But let *either* of the articles of which we are treating be prefixed to the word *man*, and that word is immediately reduced from the name of a *whole genus* to denote only a *ſingle individual*; and inſtead of the noble truth which this line aſſerts, the poet will be made to ſay, that the proper ſtudy of mankind is not the common nature which is diffuſed through the whole human race, but the manners and caprice of *one individual*. Thus far therefore the two articles agree: but they differ in this, that though they *both* limit the ſpecific name to *ſome* individual, the article A leaves the *individual itſelf unaſcertained*; whereas the article THE *aſcertains the individual alſo*, and can be prefixed to the ſpecific name only when an individual is intended, of which ſomething may be predicated that diſtinguiſhes it from the other individuals of the ſpecies. Thus, if I ſay—*A man is fit for treaſons*, my aſſertion may appear ſtrange and vague; but the ſentence is complete, and wants nothing to make it intelligible: but if I ſay—*THE man is fit for treaſons*, I ſpeak nonſenſe; for as the article THE ſhows that I mean *ſome particular* man, it will be impoſſible to diſcover my meaning till I complete the ſentence, and predicate ſomething of the individual intended to diſtinguiſh him from other individuals.

26
The indefinite and the definite.

> "THE man *that hath not muſic in himſelf*, &c.
> "Is fit for treaſons."——

A man, therefore, means ſome one or other of the human race *indefinitely*; *THE man* means, *definitely*, that *particular* man who is ſpoken of: the former is called the *indefinite*, the latter the *definite*, article.

26
The difference between theſe two.

The two articles differ likewiſe in this reſpect, that as the article A ſerves only to ſeparate *one individual* object from the general claſs to which it belongs, it cannot be applied to *plurals*. It has indeed the ſame ſignification nearly with the numerical word *one*; and in French and Italian, the ſame word that denotes unity is alſo the article of which we now treat. But the eſſence of the article THE being to define objects, by pointing them out as thoſe of which ſomething is affirmed or denied which is not affirmed or denied of the other objects of the ſame claſs, it is equally applicable to *both* numbers; for things may be predicated of one *SET of men*, as well as of a *ſingle man*, which cannot be predicated of *other* men. The uſe and import of each article will appear from the following example: "*Man* was made for ſociety, and ought to extend his goodwill to *all men*; but *a man* will naturally entertain a more particular regard for *the man* with whom he has the moſt frequent intercourſe, and enter into a ſtill cloſer union with *the man* whoſe temper and diſpoſition ſuit beſt with his own."

We have ſaid, that the article A cannot be applied to plurals, becauſe it denotes unity: but to this rule there is apparently a remarkable exception in the uſe of the adjectives *few* and *many* (the latter chiefly with the word *great* before it), which, though joined with *plural ſubſtantives*, yet admit of the *ſingular article* A; as, *a few men*, *a great many men*. The reaſon of this is manifeſt from the effect which the article has in theſe phraſes: it means a ſmall or a great number *collectively* taken, to which it gives the idea of a *whole*, that is, of *unity*. Thus likewiſe *a hundred*, *a thouſand*, is *one whole number*, an aggregate of many collectively taken, and therefore ſtill retains the article A, though joined as an adjective to a plural ſubſtantive; as, *a hundred years*. The exception therefore is only apparent; and we may affirm, that the article A *univerſally* denotes *unity*.

24. The indefinite article is much leſs uſeful than the other; and therefore the Greek and Hebrew languages have it not, though they both have a definite article. In languages of which the *nouns*, *adjectives*, and *verbs*, have inflexion, no miſtake can ariſe from the want of the *indefinite* article; becauſe it can always be known by the *terminations* of the *noun* and the *verb*, and by the circumſtances predicated of the noun, whether a *whole ſpecies* or *one individual* be intended. But this is not the caſe in Engliſh. In that language, the adjectives having no variation with reſpect to gender or number, and the tenſes of the verbs being for the moſt part the ſame in both numbers, it might be often doubtful, had we not the indefinite article, whether the *ſpecific name* was intended to expreſs the *whole ſpecies* or only *one individual*. Thus if we ſay in Engliſh, "*Man was born ſent from God*," we muſt be underſtood to mean that the birth of *every* man is from God, becauſe to the ſpecific term the indefinite article is not prefixed. Yet the words Εγενετο ανθρωπος απεσταλμενος παρα Θεου convey no ſuch meaning to any perſon acquainted with the Greek language; as the word ανθρωπος, without any article, is reſtricted to an individual by its concord with the verb and the participle; and the ſenſe of the paſſage is, A *man was born (or exiſted) ſent from God*. But though the *Greeks* have no article correſpondent to the article A, yet nothing can be more nearly related than their Ο' to our THE. Ο' βασιλευς—THE *king*; Το δωρον—THE *gift*. In one reſpect, indeed, the Greek and Engliſh articles differ. The former is varied according to the gender and number of the noun with which it is aſſociated, being ὁ—*maſculine*, ἡ—*feminine*, το—*neuter*; and οἱ, αἱ, τα, in the *plural number*: whereas the Engliſh article ſuffers no change, being invariably THE before nouns of every gender and in both numbers. There are, however, ſome modern languages which, in imitation of the Greek, admit of a variation of their article which relates to gender; but this cannot be conſidered as *eſſential* to this ſpecies of words, and it may be queſtioned whether it be any improvement to the language. In tongues of which the nouns have no inflexion, it can only ſerve to perplex and confuſe, as it always preſents a particular idea of *ſex* where in many caſes it is not neceſſary.

27
A greater number of articles in the Engliſh language than is commonly ſuppoſed.

25. The articles already mentioned are allowed to be ſtrictly and properly ſuch by every grammarian; but there are ſome words, ſuch as *this*, *that*, *any*, *ſome*, *all*, *other*, &c. which are generally ſaid to be ſometimes *articles* and ſometimes *pronouns*, according to the different modes of uſing them. That words ſhould change their *nature* in this manner, ſo as to belong ſometimes to *one* part of ſpeech, and ſometimes to *another*, muſt to every unprejudiced perſon appear very extraordinary; and if it were a fact, language would be a thing ſo equivocal, that all inquiries into its nature upon principles of ſcience and reaſon would be vain. But we cannot perceive any ſuch fluctuation in any word whatever; though we know it to be a general charge brought againſt words of almoſt every denomination, of which we have already ſeen *one* inſtance in the *poſſeſſive caſe of nouns*, and ſhall now ſee *another* in thoſe words which are commonly called *pronominal articles*.

If it be true, as we acknowledge it to be, that the genuine PRONOUN *always ſtands* by *itſelf*, aſſuming the *power* of a *noun*, and ſupplying *its place*, then is it certain that the words *this*, *that*, *any*, *ſome*, &c. can *never* be PRONOUNS. We are indeed told, that when we ſay THIS *is virtue*, *give me* THAT, the words *this* and *that* are *pronouns*; but that when we ſay, THIS HABIT *is virtue*, THAT MAN *defrauded me*, then are they *articles* or *definitives*. This, however, is evidently a miſtake occaſioned by overlooking thoſe abbreviations in conſtruction which are frequent in every language, and which, on account of that very frequency, have perhaps eſcaped the attention of grammarians whoſe ſagacity has been ſucceſsfully employed on matters leſs obvious.—When we ſay THIS *is virtue*, it is evident that we communicate no intelligence till we add a *ſubſtantive* to the word *this*, and declare *what* is virtue. The word *this* can therefore in no inſtance aſſume the power of a noun, ſince the noun to which it relates, though for the ſake of diſpatch it may be omitted in writing or converſation, muſt always be ſupplied by the mind of the reader or hearer, to make the ſentence intelligible, or *this* itſelf of any importance.—"When we have viewed ſpeech analyſed, we may then conſider it as compounded. And here, in the firſt place, we may contemplate that *ſyntheſis*, which by combining ſimple terms produces a truth; then by combining two truths produces a third; and thus others and others in continued demonſtration, till we are led, as by a road, into the regions of ſcience. Now THIS is that ſuperior and moſt excellent ſyntheſis which alone applies itſelf to our intellect or reaſon, and which to conduct according to rule conſtitutes the *art of logic*. After THIS we may turn to thoſe inferior compoſitions which are productive of the pathetic," &c.—Here, if any where, the word THIS may be thought to *ſtand by itſelf*, and to aſſume the *power of a noun*; but let any man complete the conſtruction of each ſentence, and he will perceive that THIS is no more than a *definite article*. Thus,—"we may contemplate that ſyntheſis which by combining ſimple terms produces a truth; then by combining two truths produces a third *truth*; and thus other *truths* and other *truths* in continued demonſtration, till we are lead, as by a road, into the regions of ſcience. Now THIS *combination of truths* is that ſuperior and moſt excellent ſyntheſis which alone applies itſelf to our intellect or reaſon, and which to conduct according to rule conſtitutes the *art of logic*. After *we have contemplated* THIS *art*, we may turn," &c.

The word THAT is generally conſidered as ſtill more equivocal than *this*; for it is ſaid to be ſometimes an *article*,

article, ſometimes a *pronoun*, and ſometimes a *conjuntion*. In the following extract it appears in all theſe capacities: and yet, upon reſolving the paſſage into parts and completing the conſtruction, it will be found to be invariably a *definite article*.—"It is neceſſary to *that* perfection, of which our preſent ſtate is capable, *that* the mind and body ſhould both be kept in action; *that* neither the faculties of the one nor of the other be ſuffered to grow lax or torpid for want of uſe: but neither ſhould health be purchaſed by voluntary ſubmiſſion to ignorance, nor ſhould knowledge be cultivated at the expence of health; for *that* muſt enable it either to give pleaſure to its poſſeſſor, or aſſiſtance to others." If this long ſentence be reſolved into its conſtituent parts, and the words be ſupplied which complete the conſtruction, we ſhall ſee the import of the word THAT to be preciſely the ſame in each clauſe. "The mind and body ſhould both be kept in action; THAT action is neceſſary to THAT perfection of which our preſent ſtate is capable: neither the faculties of the one nor of the other ſhould be ſuffered to grow lax or torpid for want of uſe; *the degree of action proper to prevent* THAT *laxneſs* is neceſſary: but neither ſhould health be purchaſed by voluntary ſubmiſſion to ignorance, nor ſhould knowledge be cultivated at the expence of health; for THAT *health* muſt enable it either to give pleaſure to its poſſeſſor, or aſſiſtance to others." Again,

> "He that's unſkilful will not toſs a ball:"

"A man unſkilful (he is *that*) will not toſs a ball." Here the word THAT, though ſubſtituted for what is called the *relative* pronoun (E), ſtill preſerves unchanged its definitive import; and in every inſtance except where it may be uſed very improperly, it will be found to be neither more nor leſs than a *definite article*.

26. It appears then, that if the *eſſence* of an *article* be *to define* and *aſcertain*, the words *this* and *that*, as well as *any*, *ſome*, *all*, &c. which are commonly called *pronominal articles*, are much more properly *articles* than any thing elſe, and as ſuch ſhould be conſidered in univerſal grammar. Thus when we ſay, THIS *picture I approve*, but THAT *I diſlike*; what do we perform by the help of the words THIS and THAT, but bring down the common appellative to denote two individuals; the one as *the more near*, the other as *the more diſtant*? So when we ſay, SOME *men are virtuous, but* ALL *men are mortal*; what is the natural effect of this ALL and SOME, but to define that *univerſality* and *particularity* which would remain indefinite were we to take them away? The ſame is evident in ſuch ſentences as, SOME *ſubſtances have ſenſation*, OTHERS *want it*; *Chooſe* ANY *way of acting, and* SOME *men will find fault*, &c.: for here SOME, OTHER, and ANY, ſerve all of them to *define* different parts of a given whole; SOME, to denote any *indeterminate part*; ANY, to denote an *indefinite mode of acting, no matter what*; and OTHER, to denote *remaining* part, when a part has been aſſumed already.

28
Articles in the Latin language.

27. We have ſaid that the *article* is a part of ſpeech ſo very neceſſary, that without it, or ſome equivalent invention (F), mankind could not communicate their thoughts; and that of words falling under this deſcription, we know of no language which is wholly deſtitute. We are aware that theſe poſitions may be controverted; and that the *Latin* may be inſtanced as a language which, without *articles*, is not only capable of communicating the ordinary thoughts of the ſpeaker to the mind of the hearer; but which, in the hands of *Cicero*, *Virgil* and *Lucretius*, was made to ſerve all the purpoſes of the moſt profound philoſopher, the moſt impaſſioned orator, and the ſublimeſt poet. That the Latin has been made to ſerve all theſe purpoſes cannot be denied, although *Lucretius* and *Cicero* both complain, that on the ſubject of *philoſophy*, where the uſe of articles is moſt conſpicuous, it is a deficient language. But ſhould we grant what cannot be demanded, that thoſe two great men were unacquainted with the powers of their native tongue, our poſitions would ſtill remain unſhaken; for we deny that the *Latin* is wholly without articles. It has indeed no word of preciſely the ſame import with our THE or the *Greek* ὁ; but the place of the indefinite article A might be always ſupplied, if neceſſary, with the numerical word *unus*. It may be ſo even in Engliſh; for we believe there is not a ſingle inſtance where the words *one man*, *one horſe*, *one virtue*, might not be ſubſtituted for the words *a man*, *a horſe*, *a virtue*, &c. without in the ſlighteſt degree altering the ſenſe of the paſſage where ſuch words occur. This ſubſtitution, however, can be but very ſeldom if ever neceſſary in the *Latin* tongue, of which the preciſion is much greater than that of the *Engliſh* would be without articles; becauſe the oblique caſes of the Latin nouns, and the inflexion of its verbs, will almoſt always enable the reader to determine whether an appellative repreſents a whole ſpecies or a ſingle individual.—The want of the definite article THE ſeems to be a greater defect; yet there are few inſtances in which its place might not be ſupplied by THIS or by THAT without obſcuring the ſenſe; and the Latin tongue is by no means deficient of articles correſponding to theſe two. Let us ſubſtitute the words ONE and THAT for A and THE in ſome of the foregoing examples, and we ſhall find, though the ſound may be uncouth, the ſenſe will remain. Thus,

> "THAT man who hath not muſic in himſelf, &c.
> "Is fit for treaſons,"——

conveys to the mind of the reader the very ſame ſentiment which the poet expreſſes by the words "THE man that hath not muſic," &c. Again, "*Man* was made for ſociety, and ought to extend his good-will to *all men*; but *one* man will naturally entertain a more particular regard for *thoſe men* with whom he has the moſt frequent intercourſe, and enter into a ſtill cloſer union with *that man* whoſe temper and diſpoſition ſuit beſt with his own." Now the words HIC and ILLE being exactly of the ſame import with the words THIS and THAT; it follows, that wherever the place of the article THE may in *Engliſh* be ſupplied by THIS or by THAT, it may in *Latin* be ſupplied by HIC or by ILLE. This is

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(E) See more of this afterwards.

(F) As in the Perſian and other eaſtern languages, in which the place of our indefinite article is ſupplied by a termination to thoſe nouns which are meant to be particularized.

is the caſe with reſpect to NATHAN's reproof of DAVID, where the definite article is indeed moſt emphatical. The original words might have been tranſlated into Engliſh, "thou art *that* man," as well as "thou art *the* man;" and in *Latin* they may with the utmoſt propriety be rendered, "Tu es *ille* homo." Indeed the words HIC and ILLE, and we might inſtance many more, though they are commonly called *pronouns*, are in truth nothing but *definite articles:* HIC is evidently ὅκε; and ILLE is moſt probably derived from the Hebrew word *al*, in the plural *ale;* which may be tranſlated indifferently, either THE or THAT. But what proves beyond diſpute that theſe two words are not *pronouns* but *articles*, is, that in no ſingle inſtance will they be found to ſtand by themſelves and aſſume the power of *nouns*. For the ſake of diſpatch, or to avoid diſagreeable repetitions, the *noun* may indeed be often omitted; but it is *always ſupplied* by the *reader or hearer*, when HIC and ILLE appear in their proper place, and are ſeen to be invariably *definite articles*. We ſhall give an example of the uſe of each word, and diſmiſs the ſubject.

28
Hic and *Ille* articles.

In the firſt oration againſt Catiline, Cicero begins with addreſſing himſelf in a very impaſſioned ſtyle to the traitor, who was preſent in the ſenate-houſe. He then exclaims pathetically againſt the manners of the age, and proceeds in theſe words: *Senatus hæc intelligit, conſul videt;* HIC *tamen vivit. Vivit? immo verè etiam in ſenatum venit: fit publici conſilii particeps.* In this paſſage HIC cannot be a pronoun; for from the beginning of the oration there occurs not a ſingle *noun* of which it can poſſibly ſupply the place. When the orator uttered it, he was probably *pointing with his finger* at Catiline, and every one of his audience would ſupply the *noun* in his own mind, as we do when we tranſlate it, "Yet *this traitor lives*." When Virgil ſays,

> ILLE *ego, qui quondam gracili modulatus avena*
> *Carmen,*

it is obvious that he means, *I am* THAT MAN or THAT POET, *who ſung*, &c.; and though we may tranſlate the words "I am *he* who tuned his ſong," &c. yet when we conſtrue the paſſage, we are under the neceſſity of ſupplying either *vates* or *vir*, which ſhows that ILLE is nothing more than a definite article ſignifying THAT or THE. It appears then, that the *Latin* tongue is not wholly deſtitute of articles, as few caſes can occur where the greek ὁ and our THE may not be ſupplied by the words HIC and ILLE; which have in our opinion been very improperly termed *pronouns*. If there be *any* ſuch caſes, we can only confeſs that the Latin language is defective; whereas, had it *no* articles, it is not eaſy to conceive how it could anſwer, to a cultivated people, the ordinary purpoſes of ſpeech.

28. The articles THIS and THAT, unlike A and THE, are varied according as the noun, with which they are aſſociated, is in the ſingular or in the plural number. Thus we ſay—*this* and *that man* in the ſingular, and *theſe* and *thoſe men* in the plural. The Latin articles *hic* and *ille*, for ſuch we will call them, are varied like the Greek ὁ, not only with the number, but alſo with the gender of their nouns. In languages, where the ſtructure of a ſentence may be ſo changed from the order of nature, as it commonly is in Greek and Latin, and where the reader is guided, not by the *poſition*, but by the *terminations* of the words, to thoſe which are in concord and thoſe which are not, theſe variations of the article have their uſe; but in Engliſh they are of no importance. Were it not that the cuſtom of the language—the *forma loquendi*, as Horace calls it—has determined otherwiſe, there would be no more impropriety in ſaying *this* or *that men*, than in ſaying *ſome men* or *the men*.

29
With what words articles cannot be united.

29. As articles are by their nature definitives, it follows of courſe, that they cannot be united with ſuch words as are in their own nature *as definite as they may be*: nor with ſuch words as, *being undefinable, cannot properly be made otherwiſe*; but only with thoſe words *which, though indefinite, are yet capable through the article of becoming definite*. Hence the reaſon why it is abſurd to ſay, THE I, or THE THOU; becauſe nothing, as will be ſeen afterwards, can make theſe pronouns more *definite* than they are of themſelves; and the ſame may be ſaid of proper names. Neither can we ſay, THE BOTH, becauſe the word BOTH is *in its own nature* perfectly defined. Thus, if it be ſaid—"I have read both poets,"—this plainly indicates *a definite pair*, of whom ſome mention has been made already. On the contrary, if it be ſaid, "I have read two poets," this may mean *any pair* out of all that ever exiſted. And hence this numeral being in this ſenſe indefinite (as indeed are all others as well as itſelf), is forced to *aſſume the article* whenever it would become *definite*. Hence alſo it is, that as TWO, when taken alone, has reference to ſome *primary* and *indefinite* perception, while the article THE has reference to ſome perception *ſecondary* and *definite*, it is bad language to ſay, TWO THE MEN, as this would be *blending of incompatibles*, that is, it would be repreſenting two men as *defined* and *undefined* at the *ſame time*. On the contrary, to ſay BOTH THE MEN is good language; becauſe the ſubſtantive cannot poſſibly be leſs apt by being defined, to coaleſce with a numeral adjective which is defined as well as itſelf. So likewiſe it is correct to ſay, THE TWO MEN, THESE TWO MEN, or THOSE TWO MEN; becauſe here the article being placed at the beginning, *extends its power*, as well through the numeral adjective as the ſubſtantive, and tends equally to *define* them both.

30
With what words they naturally aſſociate.

30. As ſome of the above words admit of no article, *becauſe they are by nature as definite as may be*; ſo there are others which admit it not, *becauſe they are not to be defined at all*. Of this ſort are all INTERROGATIVES. If we queſtion about *ſubſtances*, we cannot ſay, THE WHO IS THIS, but WHO IS THIS? And the ſame as to *qualities* and both *quantities:* for we ſay, without an article WHAT SORT OF, HOW MANY, HOW GREAT? The reaſon is, the article THE reſpects beings of which we can *predicate ſomething:* but interrogatives reſpect beings about which we are *ignorant*, and of which we can therefore *predicate nothing;* for as to what we know, interrogation is ſuperfluous. In a word, the *natural aſſociators with articles* are ALL THOSE COMMON APPELLATIVES WHICH DENOTE THE SEVERAL GENERA AND SPECIES OF BEINGS: and it may be queſtioned whether, in ſtrictneſs of ſpeech, they are ever aſſociated with any other words.

31. We have ſaid that proper names admit not of the article, being, in their *own nature*, definite. This is true, whilſt each name is confined to *one individual;* but as different perſons often go by the ſame name, it is neceſſary to diſtinguiſh theſe from one another, to

prevent the ambiguity which this identity of name would otherwiſe occaſion. For this purpoſe we are obliged to have recourſe to *adjectives* or *epithets*. For example, there were two *Grecian chiefs* who bore the name of *Ajax*; and it was not without reaſon that *Mneſtheus* uſed *epithets* when his intention was to diſtinguiſh the one from the other: "If both *Ajaxes* cannot be ſpared (ſaid he), at leaſt let mighty *Telamonian Ajax* come." But as epithets are diffuſed through various ſubjects, in as much as the ſame adjective may be referred to many ſubſtantives, it has been ſaid to be neceſſary, in order to render both parts of ſpeech equally definite, that the adjective itſelf aſſume an article before it, which may indicate *a reference to ſome ſingle perſon only*. It is thus we ſay—*Trypho* THE *Grammarian*; *Apollodorus* THE *Cyrenian*, &c. This is the doctrine of *Mr Harris*; from which, though we have the higheſt reſpect for the learning of the author, we feel ourſelves obliged to diſſent. In the example given, the article THE is certainly not aſſociated with the words *Grammarian* and *Cyrenian*, in the ſame manner in which it is aſſociated with the word *man* in the ſentence—"The man that hath not muſic in himſelf," &c. When we ſay *Apollodorus the Cyrenian*, we may, without folly or impertinence, be aſked—the *Cyrenian*, *WHAT* (G)? And the moment this queſtion is anſwered, it will be ſeen that the article defines *not* an *adjective* but a *ſubſtantive*. If the anſwer be the *Cyrenian philoſopher*, the article THE is aſſociated with the word *philoſopher*, and the phraſe *Apollodorus* THE *Cyrenian*, is an abbreviation of *Apollodorus* THE *philoſopher of Cyrene*. In like manner, *Trypho* THE *grammarian*, is *Trypho* THE *grammarian writer*, or *Trypho* THE *writer of grammar*. Such abbreviations are very common. We familiarly ſay THE SPEAKER, and are underſtood to mean a high officer in the congreſs or parliament; yet as *ſpeaker* is a name common to many men, we may, without impropriety, be aſked, *what* ſpeaker we mean? and if ſo, we muſt reply, *the ſpeaker of the houſe of repreſentatives*. But that which is eminent is ſuppoſed to be generally known; and therefore, in common language, THE SPEAKER is deemed a ſufficient deſignation of him who preſides over the houſe of repreſentatives. Hence, by an eaſy tranſition, the definite article, from denoting *reference*, comes to denote *eminence* alſo; that is to ſay, from implying an *ordinary* pre-acquaintance, to preſume a kind of *general* and *univerſal notoriety*. Thus A KING is any king; but THE KING is that perſon who is acknowledged for a ſovereign by any nation, as, the *king of Great Britain*. In Greek too, as in Engliſh, the article is often a mark of eminence; for THE POET meant *Homer*, and THE STAGYRITE meant *Ariſtotle*; not but that there were many *poets* beſides *Homer*, and many *ſtagyrites* beſides *Ariſtotle*, but none equally illuſtrious.

31 The great utility of this ſpecies of words.

32. Before we diſmiſs the ARTICLE, we ſhall produce one example to ſhow the utility of this ſpecies of words; which, although they may *ſeem* to be of ſmall importance, yet, when properly applied, ſerve to make a few general terms ſufficient for expreſſing, with accuracy, all the various objects about which mankind can have occaſion to converſe. Let MAN be the general term, which I have occaſion to employ for the purpoſe of denoting ſome particular. Let it be required to expreſs this particular as *unknown*; I ſay A *man*:—*Known*; I ſay THE *man*:—*Definite*; A CERTAIN *man*:—*Indefinite*: ANY *man*:—*Preſent, and near*; THIS *man*:—*Preſent, and at ſome diſtance*; THAT *man*:—*Like to ſome other*; SUCH *a man*:—*Different from ſome other*; ANOTHER *man*:—*An indefinite multitude*; MANY *men*:—*A definite multitude*; A THOUSAND *men*:—*The ones of a multitude, taken throughout*; EVERY *man*:—*The ſame ones taken with diſtinction*; EACH *man*:—*Taken in order*; FIRST *man*, SECOND *man*, &c.: *The whole multitude of particulars taken collectively*; ALL *men*:—*The negation of that multitude*; NO *man*:—*A number of particulars preſent and near*; THESE *men*:—*At ſome diſtance, or oppoſed to others*; THOSE *men*:—*A number of individuals ſeparated from another number*; OTHER *men*:—*A ſmall indefinite number*; FEW *men*:—*A proportionally greater number*; MORE *men*:—*A ſmaller number*: FEWER *men*:—And ſo on we might go almoſt to infinitude. But not to dwell longer upon this ſubject, we ſhall only remark, "that minute changes in PRINCIPLES lead to mighty changes in effects; ſo that PRINCIPLES are well intitled to regard, however trivial they may appear."

CHAPTER III.

Of Pronouns, *or* Substantives *of the ſecond order.*

33. To men who are neither intoxicated with their own abilities, nor ambitious of the honour of building new ſyſtems, little pleaſure can accrue from differing upon points of ſcience from writers of great and deſerved reputation. In ſuch circumſtances a man of modeſty, although he will not upon the authority of a celebrated name adopt an opinion of which he perceives not the truth, muſt always advance his own notions with ſome degree of diffidence, as being conſcious that the truth which he cannot perceive, may be viſible to a keener and more perſpicacious eye. In theſe circumſtances we feel ourſelves with regard to ſome of the moſt celebrated writers on grammar, from whom, concerning one or two points, comparatively indeed of but little importance, we have already been compelled reluctantly to differ. In treating of pronouns we are likely to deviate ſtill farther from the beaten track; but that we may not be accuſed of acting the part of dogmatiſts in literature, and of claiming from others that implicit confidence which we refuſe to give, we ſhall ſtate with fairneſs the commonly received opinions, point out in what reſpects we think them erroneous, aſſign our reaſons for calling them in queſtion, and leave our readers to judge for themſelves. The moſt celebrated writer in Engliſh who has treated of pronouns, and whom, ſince the publication of his *Hermes*, moſt other writers have implicitly followed, is Mr HARRIS, who, after a ſhort introduction proceeds thus:

32 The commonly ſuppoſed import of the perſonal pronouns.

34. "All converſation paſſes between *individuals* who will often happen to be till that inſtant *unacquainted with each other*. What then is to be done? How ſhall the ſpeaker addreſs the other, when he knows not his name? or how explain himſelf by his own name, of which the other is wholly ignorant? Nouns, as they have

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(G) Man or child, philoſopher, orator, poet, or ſoldier, &c.

have been deſcribed, cannot anſwer this purpoſe. The firſt expedient upon this occaſion ſeems to have been *pointing*, or *indication by the finger or hand*; ſome traces of which are ſtill to be obſerved, as a part of that action which naturally attends our ſpeaking. But the authors of language were not content with this: they invented a race of *words to ſupply this pointing*; which words, *as they always ſtood for ſubſtantives or nouns* were characterized by the name of PRONOUNS. Theſe alſo they diſtinguiſhed into three ſeveral ſorts, calling them *pronouns* of the *firſt*, the *ſecond*, and the *third perſon*, with a view to certain diſtinctions, which may be explained as follows.

"Suppoſe the parties converſing to be wholly unacquainted, neither name nor countenance on either ſide known, and the ſubject of the converſation to be *the ſpeaker himſelf*. Here to ſupply the place of pointing, by a word of *equal* power, the inventors of language furniſhed the ſpeaker with the *pronoun* I; I *write*, I *ſay*, I *deſire*, &c.: and as the ſpeaker is always principal with reſpect to his own diſcourſe, this they called, for that reaſon, *the pronoun of the firſt perſon*.

"Again, ſuppoſe the ſubject of the converſation to be *the party addreſſed*. Here, for ſimilar reaſons, they invented the *pronoun* THOU; THOU *writeſt*, THOU *walkeſt*, &c.: and as the party addreſſed is next in dignity to the ſpeaker, or at leaſt comes next with reference to the diſcourſe, this pronoun they therefore called *the pronoun of the ſecond perſon*.

"Laſtly, ſuppoſe the ſubject of converſation neither the ſpeaker nor the party addreſſed, but *ſome third object different from both*. Here they provided another pronoun, HE, SHE, or IT; which, in diſtinction to the two former, was called *the pronoun of the third perſon*: And thus it was that *pronouns* came to be diſtinguiſhed by their reſpective PERSONS."

36. The deſcription of the different PERSONS here given is taken, we are told, from Priscian, who took it from Apollonius. But whatever be the deference due to theſe *ancient maſters*, their learned pupil, though guided by them, ſeems not to have hit upon the *true* and *diſtinguiſhing* characteriſtic of the *perſonal pronouns*. He ſuppoſes, that when the names of two perſons converſing together are known to each other, they may, by the uſe of theſe names, expreſs all that the perſonal pronouns expreſs: but this is certainly not true. To us, at leaſt, there appears to be a very material difference between ſaying, "*George* did this," and "I did this;" nor do we think that the power of the *pronoun* would be completely ſupplied by the *name*, even with the additional aid of *indication by the hand*. So when one man ſays to another, with whom he is converſing, "*James* did ſo and ſo;" it is ſurely not equivalent to his ſaying, "YOU did ſo and ſo." If ſuch were the caſe, one might pertinently aſk, when both perſons are known to each other, Why do they uſe the perſonal *pronouns*? Mr Harris tells us, that "when the ſubject of converſation is the *ſpeaker himſelf*, he uſes I; and when it is *the party addreſſed*, he uſes THOU." But in fact the *nature of the perſonal pronouns* has no ſort of connection with the *ſubject of converſation*, whether that converſation relate to *the ſpeaker*, *the party addreſſed*, or a *Greek book*. In this ſentence, "I *ſay* that the three angles of every triangle are equal to two right angles," the *ſpeaker* is ſurely not the *ſubject* of the diſcourſe: nor is *the party addreſſed*, but the *truth of his aſſertion*, the *ſubject* of diſcourſe in the *following* ſentence;—"*You ſay* that *Horne Tooke's Diverſions of Purley* is the moſt maſterly treatiſe on grammar, ſo far as it goes, that you have ever ſeen." *Mr Harris* uſes the phraſe, *becoming the ſubject of converſation*, in no other ſenſe than that when *the ſpeaker* has occaſion to *mention* HIMSELF, he uſes *I*; when *the party addreſſed*, THOU; and when ſome *other perſon* or *thing*, HE, SHE, or IT: but we know that he may uſe other words, by *no means equivalent* to the *two firſt* of theſe *pronouns*, which will ſufficiently mark *himſelf*, and *the party addreſſed*; and that he may uſe indifferently, and without the ſmalleſt injury to the ſenſe, either the *third pronoun*, or the word for which it is merely a *ſubſtitute*. A man who bears various characters, may deſign HIMSELF by any one of them. Thus Mr Pitt may ſpeak of himſelf as *firſt lord of the treaſury*, *chancellor of the exchequer*, or *member for the univerſity of Cambridge*; and in each caſe he would be what Mr Harris calls the *ſubject of converſation*: yet every one feels that none of theſe deſignations is equivalent to *I*. What then is the force of the perſonal pronouns?

33 The real import of them.

37. It appears to be ſimply this: The *firſt* denotes the *ſpeaker*, AS CHARACTERIZED BY THE PRESENT ACT OF SPEAKING, in *contradiſtinction* to *every other character* which he may bear. The *ſecond* denotes *the party addreſſed*, AS CHARACTERIZED BY THE PRESENT CIRCUMSTANCE OF BEING ADDRESSED, *in contradiſtinction to every other character*, &c.: And what is called the *perſon* of the *third* pronoun is merely a NEGATION OF THE OTHER TWO, as the *neuter gender* is a negation of the *maſculine* and *feminine*. If this account of the perſonal pronouns be true, and we flatter ourſelves that its truth will be obvious to every body, there is but one way of expreſſing by other words the force of the pronouns of the *firſt* and *ſecond* perſon. Thus, "The perſon who now ſpeaks to you did ſo and ſo," is equivalent to "*I* did ſo and ſo;" and "The perſon to whom I now addreſs myſelf did ſo and ſo," is equivalent to "*You* did ſo and ſo."

Hence we ſee why it is improper to ſay *the* I or *the* THOU; for each of theſe pronouns has of *itſelf* the force of a *noun with the definite article prefixed, and denotes a perſon of whom ſomething is predicated, which diſtinguiſhes him from all other perſons*. I is *the* perſon *who now ſpeaks*, THOU is *the* perſon *who is now addreſſed by the ſpeaker*. Hence too we ſee the reaſon why the pronoun *I* is ſaid to be of the *firſt*, and the pronoun THOU of the *ſecond* perſon. Theſe pronouns can have place only in converſation, or when a man, in the character of a public ſpeaker, addreſſes himſelf to an audience; but it is obvious that there *muſt* be a *ſpeaker* before there *can* be *a hearer*; and therefore, that the *pronouns* may follow the order of nature, *I*, which denotes the perſon of the *ſpeaker*, muſt take place of THOU, which denotes the perſon of the *hearer*. Now the *ſpeaker* and the *hearer* being the only perſons engaged in converſation or declamation, *I* is with great propriety called the pronoun of the *firſt*, and THOU the pronoun of the *ſecond* perſon. We have ſaid, that, with reſpect to pronouns, the *third perſon*, as it is called, is merely a *negation of the other two*. This is evident from the ſlighteſt attention to the import of thoſe words which are called *pronouns of the third perſon*. HE, SHE, or IT, denotes not the perſon either of the *ſpeaker* or of the *hearer*;

and, as we have juſt obſerved, no other perſon can have a ſhare in converſation or declamation. An abſent perſon or an abſent thing may be the *ſubject* of converſation, but cannot be the *ſpeaker* or the *perſon addreſſed*. HE, SHE, and IT, however, as they *ſtand by themſelves*, and aſſume the *power of nouns*, are very properly denominated *pronouns*; but they are not *perſonal* pronouns in any other ſenſe than as the *negation of ſex* is the *neuter gender*.

38. We have already ſeen that nouns admit of number; *pronouns*, which are their ſubſtitutes, likewiſe admit of number. There may be MANY ſpeakers at once of the *ſame* ſentiment, as well as *one*, who including himſelf, ſpeaks the ſentiment of MANY: ſpeech may likewiſe be addreſſed to MANY at a time, as well as to ONE; and the ſubject of the diſcourſe may likewiſe be MANY. The pronoun, therefore, of every one of the *perſons* muſt admit of number to expreſs the *ſingularity* or *plurality*. Hence the pronoun of the firſt perſon *I*, has the plural WE; that of the ſecond perſon THOU has the plural YE or YOU; and that of the third perſon HE, SHE, or IT, has the plural THEY, which is equally applied to all the three genders.

34 The ſecond perſonal pronoun uſed in the pluralnumber when only one perſon is addreſſed.

The Greeks and Romans, when addreſſing *one* perſon, uſed the pronoun in the ſingular number THOU; whereas, in the polite and even in the familiar ſtyle, we, and many other modern nations, uſe the plural YOU. Although in this caſe we apply YOU to a *ſingle* perſon, yet the *verb* muſt agree with it in the *plural number*; it muſt neceſſarily be, *you have*, not *you haſt*. YOU WAS--the *ſecond perſon plural* of the *pronoun* placed in agreement with the *firſt* or *third perſon ſingular* of the *verb*, is an enormous, though common, ſolecism, which ought to be carefully avoided. In very ſolemn ſtyle, as when we addreſs the ſupreme Being, we uſe THOU—perhaps to indicate that *he is God alone, and that there is none like unto him*; and we ſometimes uſe the ſame form of the pronoun in contemptuous or very familiar language, to intimate that the perſon to whom we ſpeak is the *meaneſt* of human beings, or the *deareſt* and *moſt familiar* of our friends. A king, exerting his authority on a ſolemn occaſion, adopts the *plural* of the firſt perſon, "WE ſtrictly command and charge;" meaning, that he acts by the advice of counſellors, or rather as the repreſentative of a whole people. But in *all caſes* in which the *uſe of the pronoun* deviates from the *nature of things*, the *verb* in *concord* deviates *with it*; for, as will be ſeen afterwards, theſe two words univerſally agree in number and perſon.

35 The pronouns of the firſt and ſecond perſons have no variations to denote ſex, and why.

39. But though all theſe pronouns have *number*, neither in *Greek, Latin*, or any modern language, do thoſe of the *firſt* and *ſecond* perſon carry the diſtinctions of ſex. The reaſon is obvious (H), namely, that *ſex* and all other properties and attributes whatever, except thoſe mentioned above as *deſcriptive* of the *nature* of theſe pronouns, are foreign from the intention of the ſpeaker, who, when he uſes the pronoun *I*, means THE PERSON WHO NOW SPEAKS,—no matter whether man or woman: and when the pronoun THOU—THE PERSON—no matter whether man or woman—TO WHOM HE NOW ADDRESSES HIMSELF—and nothing more. But the pronoun of the third perſon denoting neither the *ſpeaker* nor the *hearer*, but the *ſubject* of the diſcourſe, and being merely the ſubſtitute of a *noun* which may be either *maſculine, feminine*, or *neuter*, muſt of neceſſity agree with the noun which it repreſents, and admit of a triple diſtinction ſignificant of gender. In Engliſh, which allows its adjectives no genders, this pronoun is HE in the *maſculine*, SHE in the *feminine*, and IT in the *neuter*; the utility of which diſtinction may be better found in ſuppoſing it away. Suppoſe, for example, that we ſhould in hiſtory read thoſe words: *He cauſed him to deſtroy him*—and were informed that the pronoun, which is here thrice repeated, ſtood each time for ſomething different; that is to ſay, for a man, for a woman, and for a city, whoſe names were *Alexander, Thais*, and *Perſepolis*. Taking the pronoun in this manner—diveſted of its gender—how would it appear which was deſtroyed, which the deſtroyer, and which the cauſe that moved to the deſtruction? But there is no ambiguity when we hear the genders diſtinguiſhed: when we are told, with the proper diſtinctions, that SHE *cauſed* HIM *to deſtroy* IT, we know with certainty, that the *promoter* was the *woman*; that her *inſtrument* was the *hero*; and that the *ſubject* of their cruelty was the *unfortunate city*.—From this example we would be ſurpriſed how the *Italians, French*, and *Spaniards*, could expreſs themſelves with preciſion or elegance with no more than two variations of this pronoun.

36 In this reſpect the pronoun of the third perſon differs from the firſt and ſecond.

47 The caſes of pronouns.

40. Although, in every language with which we are acquainted, there is but one pronoun for each of the firſt and ſecond perſons; and although it is obvious from the nature and import of thoſe words, that no more can be neceſſary; yet the mere *Engliſh* reader may perhaps be puzzled with finding three diſtinct words applied to each; I, MINE, and ME, for the *firſt* perſon; THOU, THINE, and THEE, for the *ſecond*. The learned reader will ſee at once that the words MINE and ME, THINE and THEE, are equivalent to the *genitive* and *accuſative caſes* of the Latin pronouns of the firſt and ſecond perſons. That MINE is a pronoun in the poſſeſſive caſe, is obvious; for if I were aſked "whoſe book is that before me?" I ſhould reply—"It is MINE (I);" meaning that it belongs to *me*.

(H) The reaſon aſſigned by Mr Harris and his followers, is, that "the ſpeaker and hearer being generally preſent to each other, it would have been ſuperfluous to have marked a diſtinction by art, which from nature and even dreſs was commonly apparent on both ſides." This is perhaps the beſt reaſon which their deſcription of the perſonal pronouns admits, but it is not ſatisfactory; for the ſpeaker and hearer may meet in the dark, when different dreſſes cannot be diſtinguiſhed.

(I) If we miſtake not, Dr Johnſon has ſomewhere affected to ridicule Biſhop Lowth for conſidering the word MINE as the *poſſeſſive caſe* of the *pronoun* of the firſt perſon. According to the Doctor, MINE is the ſame word with the pronominal adjective MY; and was anciently uſed before a vowel, as MY was before a conſonant. This is not ſaid with the great Lexicographer's uſual preciſion. That MINE was anciently uſed before a vowel is certain; but it does not therefore follow, that it is the ſame word with MY. If it were, we might on every occaſion

That the word ME is the *ſame* pronoun in the *caſe* which the Latin grammarians call the *accuſative*, is evident from the import of that word in the ſentence HE ADMIRES ME, where the *admiration* is ſuppoſed to proceed *from* (K) the *perſon ſpoken of to* the *perſon who ſpeaks*. It appears therefore, that though Engliſh *nouns* have only *two caſes*, the *nominative* and *poſſeſſive*, the *pronouns* of that language have three, *as* I, MINE, ME; THOU, THINE, THEE; HE, HIS, HIM, &c. That theſe are caſes, can be queſtioned by no man who admits that *mei, mihi, me*, are caſes of the Latin pronouns EGO. Both pronouns, the *Latin* and the *Engliſh*, are irregularly inflected: and perhaps thoſe words which are called the oblique caſes of each may have originally been derived from nominatives different from EGO and I; but theſe nominatives are now loſt, and *mei* and *mine* have, beyond all diſpute, the effect of the genitives of the *Latin* and *Engliſh pronouns* of the firſt perſon. Theſe variations, however, cannot be looked upon as an eſſential part of language, but only as a particular refinement invented to prevent the diſagreeable repetition of the pronoun, which muſt frequently have happened without ſuch a contrivance. This ſeems to have been the only reaſon why *pronouns* have been endowed with a greater variety of caſes than *nouns*. *Nouns* are in themſelves greatly diverſified. Every *genus* and every *ſpecies* of objects has a diſtinct *name*, and therefore the ſameneſs of ſound does not ſo often occur among them as it would among the *pronouns* without *caſes*, where the ſame, I, THOU HE, SHE, or IT, anſwers for every object which occurs in nature: but by this diverſity in the form of the words, the *cacophonia*, which would be otherwiſe diſguſting, is in a great meaſure avoided. It is probably, for the ſame reaſon, that the *plural* of each of theſe pronouns is ſo very different from the *ſingular*. Thus from I, MINE, ME, in the ſingular, is formed, in the plural, WE, OURS, US; from THOU, THINE, and THEE, YE or YOU, YOURS, YOU; and from HE, SHE, IT, HIS, HERS, ITS, HIM, HER, IT, in the ſingular, THEY, THEIRS, THEM, in the plural. In all of which there is not the leaſt reſemblance between the ſingular and the plural of any one word: and except in HE, HIS, HIM; IT, ITS; THEY, THEIRS, THEM; there is not any ſimilarity between the different caſes of the ſame word in the ſame number.

38 The firſt and ſecond perſonal pronouns coaleſce with the third.

41. From the account here given of the perſonal pronouns, it appears that the firſt or ſecond will, either of them, coaleſce with the third, but not with each other. For example, it is good ſenſe, as well as good grammar, to ſay in any language, I AM HE—THOU ART HE--WE WERE THEY--YOU WERE THEY; but we cannot ſay--I AM THOU—nor THOU ART I--nor WE ARE YOU, &c. The reaſon is, there is no abſurdity for the *ſpeaker* to be the *ſubject* alſo of the diſcourſe, as when it is ſaid —*I am he*; or for the *perſon addreſſed*, as when we ſay, *thou art he*. But for the ſame perſon in the ſame circumſtances, to be at once the ſpeaker and party addreſſed, is impoſſible; for which reaſon the coaleſcence of the pronouns of the firſt and ſecond perſons is likewiſe impoſſible.

39 Pronominal adjectives.

42. I, THOU, HE, SHE, and IT, are all that are uſually called *perſonal* pronouns. There is another claſs of words, which are called ſometimes *pronominal adjectives*, ſometimes *adjective pronouns*, ſometimes *poſſeſſive pronouns*; and by one writer of grammar they have been moſt abſurdly termed *pronominal articles*. It is not worth while to diſpute about a name; but the words in queſtion are MY, THY, HER, YOUR, OUR, THEIR. Theſe words are evidently in *form* of *adjectives*: for, like other Engliſh adjectives, they have no variation to indicate either *gender*, *number*, or *caſe*; and yet they are put in *concord* with *nouns* of *every* gender and *both* numbers, as MY WIFE, MY SON, MY BOOK—HER HUSBAND, HER SONS, HER DAUGHTERS, &c. But though in the *form* of *adjectives*, they have the *power* of the *perſonal pronouns* in the *poſſeſſive caſe*: MY BOOK is *the book of* ME, or the *book* of HIM WHO NOW SPEAKS; OUR HOUSE is *the houſe of* US, or the *houſe occupied by the* PERSONS WHO NOW SPEAK; HER HUSBAND, is *the huſband* of *a woman* who can be *known only from ſomething preceding in the diſcourſe*; and THEIR PROPERTY is *the property of them*—of *any perſons*, whether *men* or *women*; or *both* who have been previouſly mentioned. Words which have the *form* of *adjectives*, with the *power* of *pronouns*, may without impropriety, be called *pronominal adjectives*; and ſuch is the name by which we ſhall henceforth diſtinguiſh them. To theſe pronominal adjectives, as well as to the perſonal pronouns, are ſubjoined the words *own* and *ſelf*—in the plural *ſelves*; in which caſe they are emphatical, and imply a ſilent contrariety or oppoſition. Thus, *I live in my own houſe*; that is, *not in a hired houſe*. *This I did with my own hand*; that is, *not by proxy*. *This was done by myſelf*; that is, *not by another*.
40 The reciprocal pronoun.
The word *ſelf* ſubjoined to a perſonal pronoun forms alſo the reciprocal pronoun; as, *we hurt ourſelves by vain rage*; *he blamed himſelf for his misfortune*. *Himſelf*, *itſelf*, *themſelves*, are ſuppoſed by *Wallis* to be put, by corruption, for *his ſelf*, *its ſelf*, *their ſelves*; ſo that *ſelf* is always a *ſubſtantive* or *noun*, and not a pronoun. This ſeems to be a juſt obſervation: for we ſay, *the man came himſelf*; *they went themſelves*; where the words *himſelf* and *themſelves* cannot be accuſatives but nominatives, and were anciently written *his ſelf*, *their ſelves*

There are other words which are uſually ranked under the claſs of *pronouns*; as *who*, *which*, *what*. Theſe, when employed in aſking queſtions, are called *interrogative pronouns*; though a name more characteriſtic might ſurely be found for them. Their import, however, will be more eaſily aſcertained after we have conſidered another ſpecies of pronouns, which have been denominated *relatives*, and with which they are intimately connected.

41 The relative pronoun.

43. The pronouns already mentioned may be called *prepoſitive*, as may indeed all ſubſtantives, becauſe they are capable of introducing or leading a ſentence: but

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caſion ſubſtitute either of theſe for the other, without offending again *grammar*, however we might injure the ſound; but we apprehend that this is not the caſe. "That book is MINE," is good Engliſh; but "that book is *my*," would be a groſs ſoleciſm: the reaſon is, that MINE is a *genuine pronoun*, and ſtands by *itſelf* with the *power* of a *noun*; but MY, being an adjective, cannot ſtand by itſelf.

(K) See Chap. I. 19. on the Caſes of Nouns.

but there is another pronoun which has a character peculiar to itſelf; and which, as it is never employed but to *connect* ſentences, and muſt therefore have always a reference to ſomething preceding, is called the *ſubjunctive* or *relative* pronoun. This pronoun is in Greek, ὁς, ἡ, ὁ; in *Latin*, QUÆ, QUOD; and in *Engliſh*, WHO, WHICH, THAT.

42 Represents any noun or prepoſitive pronoun;

44. In order to determine with preciſion the nature and import of the *relative pronoun*, it will be neceſſary to aſcertain the powers which it contains, or the parts of ſpeech into which it is capable of being reſolved. Now, it is obvious, that there is not a ſingle noun, or *prepoſitive pronoun*, which the *relative* is not capable of repreſenting: for we ſay, I, WHO *ſaw him yeſterday, cannot be miſtaken*; YOU, WHO *did not ſee him, may have been miſinformed*; THEY, WHO *neither ſaw nor heard, can know nothing of the matter*; THE THINGS, WHICH *he exhibited, were wonderful.* From theſe examples it is apparent, in the firſt place, that the *relative* contains in itſelf the force of any other pronoun; but it contains ſomething more.

45. If from any ſentence in which there is a *relative*, that relative be taken away, and the *prepoſitive* pronoun, which it repreſents, be ſubſtituted in its ſtead, the ſentence will loſe its bond of union, and ſtand quite looſe and unconnected. Thus, if inſtead of ſaying *the man is wiſe* WHO *ſpeaks little*, we ſhould ſay *the man is wiſe* HE *ſpeaks little*, the ſentence would be reſolved into two; and what is affirmed of the man's *wiſdom*, would have no connection with the circumſtance of his *ſpeaking little*. Hence it is evident, in the ſecond place, that the *relative* contains the force of a *connective* as well as of the prepoſitive pronoun. What kind of connection it denotes, is next to be aſcertained.

43 And contains beſides the force of a connective.

46. It may be laid down as a general principle, "that, by means of the *relative pronoun*, a *clauſe of a ſentence*, in which there is a verb, is converted into the *nature of an adjective*, and made to denote ſome *attribute* of a *ſubſtance*, or ſome *property* or *circumſtance* belonging to the *antecedent noun*." Thus, when it is ſaid, *homo qui prudentia præditus eſt*, the relative clauſe—*qui prudentia præditus eſt*, expreſſes nothing more than the *quality* of prudence in *concrete* with the *ſubject homo*, which might have been equally well expreſſed by the adjective *prudens*. In like manner, when we ſay, *vir ſapit qui pauca loquitur*, the relative clauſe expreſſes the property of *ſpeaking little* as belonging to the man, and as being that quality which conſtitutes, or from which we infer, his *wiſdom*; but if there were ſuch a word as *pauciloquens*, that quality might very properly be expreſſed by it, and the phraſe *vir ſapit pauciloquens* would expreſs the ſame aſſertion with *vir ſapit qui pauca loquitur*.

Now if a relative clauſe expreſſes that which might be expreſſed by an adjective, the preſumption is, that it may be reſolved into the ſame conſtituent parts. But every adjective contains the powers of an *abſtract ſubſtantive*, together with an expreſſion of connection; and may be reſolved into the *genitive caſe* of that ſubſtantive, or into the *nominative* with the particle *of* prefixed, which, in Engliſh, correſponds to the termination of the genitive in the ancient languages. That the member of a ſentence, in which there is a relative, may, in every inſtance, be analyſed in the ſame manner, will be apparent from the following examples. *Vir qui ſapit, vir ſapiens*, and *vir ſapientiæ*; "a man who is wiſe, a wiſe man, and a man of wiſdom;" are certainly phraſes of the ſame import. Again, *homo, cui ingratus eſt animus, malus fit amicus*, may be tranſlated into Greek, ανθρωπος αχαριστιας κακος γινεται φιλος; and into Engliſh, "the man of ingratitude is a bad friend."

44 Of the ſame import with the Engliſh prepoſition *of*.

47. Thus then it appears, that the *relative pronoun* contains in itſelf the force of the *prepoſitive* pronoun, together with that *connection* implied in Engliſh by the prepoſition *of*, and in the ancient languages by the *genitive caſe*. When one ſays, *vir ſapit qui pauca loquitur*, the relative clauſe *qui pauca loquitur* expreſſes that attribute of the man from which his wiſdom is inferred: it is conceived by the mind, as ſtript of its propoſitional form, and ſtanding in the place of a ſubſtantive noun governed in the genitive caſe by *vir*. The whole ſentence might be thus tranſlated, "the man *of little ſpeaking* is wiſe;" or did the uſe of the Engliſh language admit of it, "the man *of he ſpeaks little* is wiſe." In like manner, when it is ſaid, "Man who is born of a woman is of few days and full of trouble;"—the relative clauſe is equivalent to an *abſtract noun* in the genitive caſe, and the whole might be expreſſed in the following manner, "man *of he is born of a woman* is of few days and full of trouble."

We are ſenſible, that theſe expreſſions into which, in the inſtances adduced, we have reſolved the relative clauſes, will appear extremely uncouth and offenſive; but we mean not to recommend them as common modes of phraſeology. Againſt their being employed as ſuch, preſent uſe loudly remonſtrates (L). They are introduced only with a view to ſhow the true import of the relative

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(L) It is worthy of obſervation, however, that, repugnant as ſuch expreſſions are to the preſent idiom of the Engliſh language, there is nothing in the *nature of the thing* that could render the uſe of them improper. All *prepoſitions*, as will be ſeen afterwards, are expreſſive of relations ſubſiſting between thoſe objects of which they connect the ſigns in diſcourſe. Thoſe objects may be denoted, either by *ſingle words*, and then the *prepoſition* will govern a *noun*; or by *aſſertions*, and then it will govern *a nominative and a verb*. Thus, when it is ſaid, "I came after his departure;" the prepoſition *after* expreſſes the relation between two events—*my coming* and *his departure*, and governs a ſubſtantive noun: but if it be ſaid, "I came after he departed," the prepoſition in this caſe (for, as ſhall be ſhown afterwards, it is abſurd to call it, in the one inſtance, a prepoſition, and in the other a conjunction) expreſſes the ſame relation as before, but governs a nominative and a verb.

This laſt expreſſion is exactly ſimilar to thoſe employed above. When one ſays, for example, "the man *of he ſpeaks little* is wiſe;"—however uncouth the expreſſion may appear from its not being ſupported by the authority of cuſtom, the prepoſition *of* is uſed preciſely in the ſame manner, and ſerves the very ſame purpoſe, as when it is ſaid, "the man *of little ſpeaking* is wiſe." In both caſes it denotes the relation between the two objects *relative pronoun* ; and for that purpoſe they are well adapted. That pronoun ſeems to be of uſe only when there is a deficiency of *adjectives* or *ſubſtantives* to denote ſome *complex attribute* by which we want to *limit* a *general term* or *expreſſion*. Where ſuch adjectives or ſubſtantives exiſt in language, we may indeed uſe the *relative* or not at pleaſure. Thus we may ſay *homo qui grandia loquitur*, or *homo grandiloquus* ; becauſe the *adjective* and *the relative clauſe* are preciſely of the ſame meaning. But if the Latins were called upon to tranſlate ανθρωπος αυτοδιδακτος, we believe they muſt have made uſe of the *relative pronoun*, as we know not any correſpondent adjective in their language.

45 Mr Harris's miſtake on this ſubject.

48. The learned and ingenious Mr Harris has, in his Treatiſe on Univerſal Grammar, given an analyſis of the relative pronoun very different from that which has been given us. The reſult of his enquiry is, that the *relative* is equivalent to another pronoun, together with an expreſſion of connection of that kind which is denoted by the particle *and*. This analyſis he exemplifies, and endeavours to confirm by the following ſentence : "Light is a body which moves with great celerity." "Now, ſays he, inſtead of *which* ſubſtitute the words *and it*, and in their united powers you ſee the force and character of the pronoun here treated. But let any one attentively conſider theſe two expreſſions,—"Light is a body *which* moves with great celerity,"—and "Light is a body *and it* moves with great celerity ;" and he will find that they are not preciſely equivalent. For to ſpeak in the language of logic, there is in the *firſt* but one propoſition, of which the *ſubject* is *light*, and the *predicate* a complex term expreſſed by the words—*body which moves with great celerity*. In the *ſecond* there are two propoſitions, or *two predications* concerning light ;—firſt, *that it is a body*; and ſecondly, *that it moves with great celerity*. The relative clauſe, in the firſt caſe, expreſſes a *property* of the antecedent *body*, which with that property is predicated of the ſubject light ; in the ſecond caſe, this property is removed from the *predicate* of which it was an eſſential part, and is improperly converted into a new *predication* of the *ſubject*. The ſentence may be reſolved upon our principles, and its preciſe import preſerved ; as—"Light is a body *of it moves with great celerity* ;" the clauſe—"it moves with great celerity," is conceived by the mind as having the force of an *abſtract ſubſtantive*, and is connected with the antecedent body by the prepoſition *of*, anſwering to the termination of the genitive caſe. This abſtract ſubſtantive thus connected expreſſes a *quality* of the *body* light. But by this example Mr Harris's doctrine is not exhibited in all its abſurdity : let us try it by another.

Suppoſe the following aſſertion to be true ; "CHARLES XII. was the only monarch who conquered kingdoms to beſtow them on his friends." Here it is evident there is but one propoſition, of which the predicate is expreſſed by the words—"only monarch who conquered kingdoms to beſtow them on his friends ;" ſo that the *relative* clauſe is a *neceſſary part* of the predicate, and has, like an *abſtract noun* in the genitive caſe, the effect of modifying the general term *monarch*. Reſolve this ſentence on Mr Harris's principles, and you have two propoſitions, of which the firſt is a notorious falſehood :—"Charles XII. was the *only monarch* , *and he* conquered kingdoms to beſtow them on his friends." But inſtead of *and* ſubſtitute *of*—ſaying, "Charles XII, was the only monarch *of he conquered kingdoms to beſtow them on his friends*," and you preſerve the true import of the expreſſion (M).

49. Are there no caſes, then, in which the relative may be reſolved into the connective *and* with a prepoſitive pronoun ? Undoubtedly there are, and we ſhall now endeavour to aſcertain them.

46 In ſome caſes Mr Harris's analyſis of the relative may be admitted.

Adjectives in language have two different effects upon the ſubſtantives to which they belong, according to the nature of the attribute which they expreſs. If the attribute expreſſed by the adjective be competent to all the ſpecies of which the ſubſtantive is the ſpecific name, it is plain that the adjective does not *modify* or *limit* the ſubſtantive, for this obvious reaſon, that nothing can modify which is not diſcriminative. Thus, when

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objects—*man* and *little ſpeaking* ; only in the one it is prefixed to a noun, in the other to an aſſertory clauſe of a ſentence, the import of which is to be taken as a noun. Cuſtom hath indeed determined that prepoſitions ſhall more frequently govern a noun than a nominative and a verb ; but they are, in their own nature, equally well adapted to anſwer both purpoſes.

But, as the *pronoun* of the third perſon is merely the ſubſtitute of ſome *noun*, an objector may aſk, What noun is here repreſented by *he*? "The man *of he ſpeaks little* is wiſe !" Who is meant by the pronoun *he*? We anſwer, *the man* who is declared to be *wiſe*. The objection proceeds from inattention to the radical ſignification of the word *of*, which a late ingenious writer has ſhown to be the fragment of a Gothic or Anglo-Saxon word, ſignifying *conſequence* or *offspring*. If this be admitted, and, after the proofs which he has given, we think it cannot be denied, the uncouth phraſe, "The man *of he ſpeaks little* is wiſe," may be thus reſolved, "The man, *a conſequence* (of his mind) *he ſpeaks little*, is wiſe ;" or, in other words, "The man, *in conſequence* of his ſpeaking little, is wiſe." The ſame acute writer, *Mr Horne Tooke*, has ſhown, that *of* and *for*, though of different radical meanings, may often be ſubſtituted the one for the other without injury to the ſenſe. Let this ſubſtitution be made in the preſent inſtance, and the propriety of the phraſe will be apparent: "The man is wiſe, *for* he ſpeaks little." It muſt be remembered, however, that ſuch a ſubſtitution cannot be made in every inſtance, becauſe *for* ſignifies *cauſe*, and *of* ſignifies *conſequence*.

(M) Mr Harris was probably led into his opinion, from conſidering the Latin *qui* or *quis* as compounded of *que* and *is* (ſee *Hermes*, p. 81, 82. edit. 3d.) But the notion of *Perizonius* is perhaps better founded, who in his notes *ad Sanct. Minerv.* conſiders it as immediately taken from the Greek τις, which in the Doric made κις, and in the Latin *quis*. For it ſeems highly probable, as ſome ingenious writers have endeavoured to ſhow, that the Latin is a dialect of the Greek. Of this at leaſt we are certain, that many words in the former are immediately adopted from the latter.

when Horace ſays, “Prata canis albicant pruinis,” the adjective *canis* denotes a quality common to all *hoarfroſt*; and therefore cannot modify the *ſubſtantive*, becauſe it adds nothing to the conception of which that ſubſtantive is the name. But when the attribute expreſſed by the adjective is competent to ſome *individuals* only of the ſpecies of which the ſubſtantive is the name, the adjective has then the effect of *modifying* or *limiting* the ſubſtantive. Thus, when one ſays *vir bonus*, he makes uſe of an adjective which modifies the ſubſtantive *vir*, becauſe it expreſſes a quality or attribute which does not belong to *all men*.

The clauſe of a ſentence, in which there is a *relative*, as it is in every other reſpect, ſo is it in this, equivalent to an *adjective*; it either *modifies*, or does *not modify*, the *antecedent*, according as the *attribute* which it expreſſes is or is not characteriſtic of the *ſpecies* to which the antecedent belongs. Thus, when it is ſaid, “Man, who is born of a woman, is of few days and full of trouble,” the relative clauſe—*who is born of a woman*, expreſſes an attribute common to *all men*, and therefore cannot modify. In like manner, when we ſay —“SOCRATES, who taught moral philoſophy, was virtuous,”—the clauſe, *who taught moral philoſophy*, does not modify. In both theſe inſtances the relative clauſe might be omitted; and it might be ſaid with equal truth, “Man is of few days and full of trouble,”—and “SOCRATES was virtuous.”

But if it be ſaid, *vir ſapit qui pauca loquitur*, the relative clauſe—*qui pauca loquitur*, *modifies* the antecedent *vir*; for it is not affirmed of *every man*, that he is wiſe, but only of *ſuch men as ſpeak little*. So—“Charles XII. was the only monarch who conquered kingdoms to beſtow them on his friends;” and, “the man that endureth to the end ſhall be ſaved;” with many more examples that will occur to every reader.

47 What theſe caſes are. Now it will be found, that it is only when the relative clauſe expreſſes ſuch a property or circumſtance of the antecedent as does *not* limit its ſignification, that *the relative pronoun* can be reſolved into a *prepoſitive pronoun* with the conjunction *and*, and that in theſe caſes the relative *clauſe* itſelf is of very little importance. Thus in the aſſertion,—“Charles XII. was the only monarch who conquered kingdoms to beſtow them on his friends,”—where the relative clauſe is *reſtrictive*, the *who* cannot be reſolved into *and he* conſiſtently with truth or common ſenſe. But in the expreſſion, “Man, who is born of a woman, is of few days and full of trouble,” the relative *who* may be ſo reſolved, at leaſt without violating truth;—“Man is of few days and full of trouble, and he is born of a woman.” The only difference between the ſentence with the relative *who*, and the ſame ſentence *thus reſolved*,—is—that, in the former caſe, it contains but *one predication*; in the latter *two*, and theſe but looſely connected.

50. Thus then it appears that the general analyſis of the *relative pronoun* is into the particle *of*, and a prepoſitive pronoun; but that there are alſo occaſions on which it may be reſolved into a prepoſitive pronoun and the particle *and*, without materially altering the ſenſe. Now what is the reaſon of this diſtinction?

If the relative clauſe be equivalent to an *adjective*, or to an *abſtract ſubſtantive* in the genitive caſe, it is eaſy to ſee that the relative itſelf may, in *every* inſtance be, reſolved into another pronoun and the particle *of*; but it will not perhaps be quite ſo evident how it ſhould in *any inſtance* be reſolved by *and*. This laſt analyſis has its foundation in the nature of the particles *of* and *and*; or, to ſpeak more properly, in the nature of the attribute which the relative clauſe expreſſes. Both the particles *of* and *and* are uſed to link or join conceptions together; but with this difference, that *of* has the effect of making the conceptions it connects figure in the mind as *one object*; whereas the conceptions connected by *and* are ſtill conceived *ſeparately as before*. To explain ourſelves by an example: ſuppoſe we take two words, *man* and *virtue*, which denote two diſtinct ideas or conceptions, and join them together by the particle *of*, ſaying *man of virtue*; the mind no longer views them ſeparately as ſignificant of *two* conceptions, but of *one*. Take the ſame words, and join them together by the particle *and*, ſaying *man and virtue*: the conceptions denoted by *man* and *virtue* are ſtill viewed ſeparately as *two*; notice is only given that they are *collaterally connected*.

This being the caſe, it follows, that when the relative modifies the antecedent, or, in other words, when the *relative clauſe* and the *antecedent* denote but *one conception*, the relative muſt then be reſolved by *of*, in order to preſerve this *unity of conception*. But when the relative does *not* modify the antecedent; that is, when its clauſe does not expreſs any *neceſſary* part of a complex conception; then the conceptions or ideas denoted by the *relative clauſe* and the *antecedent* may be viewed ſeparately as *two*; and therefore the relative *may* be reſolved into the correſponding prepoſitive pronoun and the particle *and*.

To ſtate this reaſoning in a light ſomewhat different. As every relative clauſe, which expreſſes an attribute that is *not* applicable to a *whole* genus or ſpecies, muſt neceſſarily *modify* ſome *general term*, that is, *reſtrict* its ſignification; and as that general term muſt belong either to the *ſubject* or to the *predicate* of a propoſition; it is evident, that every *ſuch* relative clauſe is a *neceſſary part* of that *ſubject* or *predicate* in which its *antecedent* ſtands. If therefore a relative clauſe, which *modifies*, be taken *away* either from the *ſubject* or the *predicate* of a propoſition; or if that *connection*, in *conſequence of which* it modifies, be *diſſolved* (which is always done when the relative is reſolved by *and*); the propoſition itſelf will not hold true. The reaſon is, that the *ſubject* or the *predicate* becomes then too general: for, in the *one* caſe, ſomething is predicated of a *whole genus* or *ſpecies*, which can be predicated only of ſome *individuals* of that genus or ſpecies: and in the *other*, a *general* predication is made where only a *particular* one can be applied. Thus, if it be ſaid, “All men who tranſgreſs the laws are deſerving of puniſhment;” the *ſubject* of the propoſition is expreſſed by the words, “all men who tranſgreſs the laws.” Take the clauſe of the relative “who tranſgreſs the laws”—away, and ſay, “all men are deſerving of puniſhment;” and you have a propoſition which is not true, becauſe that is affirmed of the *whole ſpecies* which can be affirmed only of *ſome individuals*. Retaining now the clauſe of the relative, but reſolving it by *and*, you have the ſame propoſition as before; and together with it, in this inſtance, *another* which is equally falſe:—“All men, *and they* tranſgreſs the laws, are deſerving of puniſhment;" that is, "*all men* are deſerving of puniſhment, and *all men* trangreſs the laws."

But when the attribute expreſſed by the clauſe of the relative is characteriſtic of the *genus* or *ſpecies* of the antecedent, and conſequently applicable to *every individual* which that genus or ſpecies comprehends, the relative clauſe may be entirely omitted without affecting the truth of the propoſition, which is already as general as it can be. As in this caſe the import of the relative clauſe is *not reſtrictive* of the ſignification of the antecedent, it is of little conſequence whether the attribute be repreſented by the connective part of the relative, as *of*, the antecedent, or be affirmed to belong to the antecedent in a *ſeparate aſſertion*. Thus it matters not much, whether we ſay, "Man, who is ſubject to death, ought not to be too much elated;" that is, according to our analyſis,—"Man *of he is ſubject to death*, ought not to be too much elated;" or, forming the relative clauſe into a ſeparate aſſertion, and connecting the two by the particle *and*, we ſay, "Man, and he is ſubject to death, ought not to be too much elated." In the one ſentence, indeed, the *reaſon* is implied *why* man ſhould not be too much elated, viz. *his being ſubject to death*: in the other *no reaſon* is aſſigned for this; we only affirm that man is ſubject to death, and *likewiſe* that he ſhould not be too much elated: but as both affirmations are equally true and evident, it is of little conſequence, in ſuch a caſe as this, whether the reaſon upon which either is founded be implied or not.

48 Concluſion reſpecting the relative pronoun.

51. From the whole of this tedious inveſtigation, we flatter ourſelves that the following concluſions are deduced and ſufficiently eſtabliſhed: 1ſt, That the *relative pronoun* contains in itſelf the united powers of a *connective* and *another pronoun*. 2dly, That *of* is the connective of which, together with another *pronoun*, it contains the powers, as in every poſſible inſtance it may be reſolved into theſe conſtituent parts, and the *import* of the *ſentence* in which it has place *remain unaltered*. 3dly, That the relative *clauſe of a ſentence* has the import of an *abſtract ſubſtantive*, in the ancient languages, in the *genitive caſe*; in Engliſh, with the particle *of* prefixed. 4thly, That the relative *pronoun* is of *neceſſary uſe* only where there is a deficiency of *adjectives* or *ſubſtantives* to denote ſome *complex attribute*, by which we want to *limit* a *general term* or *expreſſion*; but that where ſuch adjectives or ſubſtantives exiſt in language, we may uſe the *relative* or not at pleaſure. And, 5thly, That though, in caſes where the relative *clauſe* does not *limit* a *general term*, the relative *pronoun* may, without *violating truth*, be analyſed by *and*; yet ſuch analyſis is never proper, as it gives *two predicates* to the ſame *ſubject*, which, in the original propoſition, had but *one predicate*.

52. If the clauſe of the relative be equivalent to an adjective, as in every inſtance it ſeems to be, it will naturally occur, that, in the ancient languages, the relative ſhould agree with its antecedent in *gender*, *number*, and *caſe*. They do agree for the moſt part in *gender* and *number*; in *caſe* they cannot often, becauſe the very intention of introducing a *relative* into language is to repreſent the antecedent in a *different caſe*. Whenever we have occaſion to uſe a *ſubſtantive* or *noun* in a clauſe of a ſentence, and afterwards to expreſs by *another clauſe*, in which there is a verb, an *attribute* of the *object* denoted by that *ſubſtantive*, we then employ the *relative pronoun*. Now it ſeldom happens that the two clauſes *admit* of the ſame *regimen*; and hence the *caſe* of the *relative* is often *neceſſarily different* from that of the antecedent, as the caſe of each muſt be accommodated to the clauſe in which it is found. Thus we cannot ſay, "Deus *qui* colimus bonus eſt;" But, "Deus *quem* colimus bonus eſt;" becauſe the *regimen* of the verb *colo* is always the *accuſative*.

49 Why the relative is more uſeful in the learned languages than in the Engliſh.

This ſhows the neceſſity of introducing a relative into thoſe languages which give inflexions to their nouns. Were all the nouns of a language indeclinable, there would be little occaſion for a relative; and accordingly in Engliſh it is often omitted. Examples are frequent in our beſt authors. Suffice it to quote the following.

> "For I have *buſineſs would employ* an age."
> *Jane Shore.*
>
> "I had ſeveral *men died* in my ſhip of calentures."
> *Swift.*
>
> "They who affect to gueſs at the *object they* cannot ſee."
> *Bolingbroke.*

We are not ignorant that our moſt eminent grammarians conſider ſuch expreſſions as chargeable with impropriety: and we are far from recommending them in any dignified or ſolemn compoſition. But in the inſtances adduced there is not the ſmalleſt degree of *obſcurity*; at leaſt there is none occaſioned by the *omiſſion of the relative*. The reaſon ſeems to be, that the mind can eaſily, by an effort of its own, make the *antecedent* unite, firſt with the one clauſe, and then with the other. Thus when it is ſaid—"I have *buſineſs would* employ an age;" the mind can, without any difficulty, as the word buſineſs has no inflexions, conſider it firſt as the objective caſe after *have*, and then as the nominative to *would employ*: but this cannot be ſo eaſily done in the ancient languages, where the termination of the noun is changed by the variation of its caſes.

53. Both in the learned and in the living languages the relative has different *forms*, correſponding to the different *genders of nouns*; and by theſe it gives notice whether it is applied to *perſons*, or to *things without life*. Thus in the Engliſh language we ſay, *The man* or *the woman* WHO *went to Rome; The* TREE WHICH *ſtands on yonder plain*. It admits likewiſe, when applied to males or females, a variation of caſes ſimilar to that of the *perſonal pronouns*. Thus we ſay, *The man* WHOSE *book is now before me*; *The man or woman* WHOM *I ſaw yeſterday*: but the neuter admits of no ſuch diſtinction (N); as we ſay *the tree* WHICH *I ſaw*, as well as *the tree* WHICH *ſtands on yonder plain*. In modern languages the relative admits not of any diſtinction to denote *number*: for we ſay, *The* MAN *or the* MEN *who came yeſterday*; *The* MAN *or the* MEN *of whom I ſpeak*.

50 The word *that* often ſupplies the place of this pronoun.

54. In Engliſh the word THAT, which by ſome has been called a *demonſtrative pronoun*, by others a *pronominal article*, and by us a *definite article*, is often uſed inſtead of the *relative*, as in the following examples: "He

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(N) "*Whoſe* is by ſome authors made the poſſeſſive caſe of *which*, and applied to things as well as perſons I think, improperly." *Lowth.*

"He is the ſame man *that* I ſaw yeſterday:—He was the ableſt prince *that* ever filled a throne." With regard to the principle upon which this acceptation of the word *that* depends, we offer the following conjecture.

51 And why it does ſo.

In Engliſh, from the cool and phlegmatic arrangement of the language, occaſioned by the want of inflexions and conjugations, the place of every part of a ſentence is almoſt uniformly determined, and very little variety is allowed in the collocation of the words. The *adjective* is almoſt always placed in appoſition with its *ſubſtantive*, and the *nominative* with its *verb*. In conſequence of this uniformity in the collocation of the words, the mind acquires a habit of connecting in idea any kind of *word* with the *place* in which it is *uſed* to *ſtand*; and is naturally led to conſider *every word* that ſtands in *ſuch a place* as belonging to *ſuch a claſs*. Hence it is, we imagine, that the definitive *that* paſſes into the nature of the *relative pronoun*; as in thoſe inſtances in which it occupies the *place* of the relative, it was natural to conſider it as having the ſame *import*. Yet the word *that* has undoubtedly in itſelf no more the force of the relative pronoun than *the* or *this*, or any other definitive whatever. In ſuch expreſſions as the foregoing, it is not improbable that originally the clauſe of the definitive *that*, which we now call the *relative* clauſe, was thrown in as a kind of modifying circumſtance in the following manner: "The book (I read that) is elegant;" where the ſpeaker, finding the word *book* too general for his purpoſe, throws in a clauſe to qualify and reſtrict it, or to confine his affirmation to that particular book which he is then reading. We can eaſily ſuppoſe, that through time the definitive *that* in ſuch an expreſſion might be tranſpoſed or removed from its own place to that of the *relative*: ſo that the expreſſion would run thus, "The book *that* I read is elegant:" which would be conſidered as preciſely equivalent to "The book *which* I read is elegant." This opinion is not a little confirmed by a ſimilar uſe of the article in Greek, which, though undoubtedly a definitive like the Engliſh *the*, is often uſed inſtead of the relative pronoun. Numberleſs examples may be found in *Homer* and *Herodotus*, eſpecially in the latter, who ſeldom uſes what is properly called the relative. We ſhall produce one inſtance from each.

> Εισεαι Ατρειδην Αγαμεμνονα ΤΟΝ περι παντων
> Ζευς ενεηκε πονοισι διαμπερες. *Iliad* x. 88.
> Ορκιοισι γαρ μεγαλοισι κατειχοντο (Αθηναιοι *ſcil.*) δεκα ετεα χρησισθαι νομοισι ΤΟΥΣ αν σφισι Σολων θηται.
> *Herod. Clio.*

52 Interrogative pronouns

55. We have ſaid that the *interrogative* pronouns, as they are called, *who*, *which*, *what*, are intimately connected with *relatives*; we now affirm, that the *two firſt* of theſe words are *nothing* but relatives, and that the *laſt* contains in itſelf the united powers of a *relative* and *definitive*. With reſpect to *caſes*, *number*, and *gender*, the words *who* and *which*, when employed as *interrogatives*, differ not from the ſame words when employed as *relatives*; and we hold it as a maxim, without which ſcience could not be applied to the ſubject of language, that the *ſame word* has always the ſame *radical import* in whatever different ſituations it may be placed. To underſtand this, it is neceſſary to obſerve, that all men have a natural propenſity to communicate their thoughts in the feweſt words poſſible: hence it follows, that words are often omitted which are neceſſary to complete the conſtruction of the ſentence; and this no where happens more frequently than in the uſe of *who* and *which*. In ſentences where theſe words are confeſſedly *relatives*, we often find them without an antecedent; as,

> "*Who* ſteals my purſe, ſteals traſh." *Shakeſpeare.*
> "Which *who* would learn, as ſoon may tell the ſands." *Dryden.*
> "Qui *Bavium non odit, amet tua carmina, Mævi.* Virg.

That is, "*He* who ſteals my purſe, &c.;" "Which *he* who would learn as ſoon, &c.;" and "Ille *qui Bavium non odit*," &c. Such abbreviations occaſion no obſcurity, becauſe from previous circumſtances the hearer knows the mind of the ſpeaker and the perſons to whom he refers. But it is not with reſpect to the *relative* and *antecedent* only that ſuch abbreviations have place: in ſentences of a different form, whole clauſes are ſometimes omitted, while the meaning of the ſpeaker is made ſufficiently plain. Thus when king Richard III. having loſt his horſe in battle, exclaims,

> "A horſe! a horſe! my kingdom for a horſe!"

there is no complete thought *expreſſed*; but the circumſtances in which the king then was, enabled thoſe about him to underſtand that he *wanted a horſe*. Accordingly Cateſby anſwers him,

> "Withdraw, my lord, I'll help you to a horſe."

53 Are merely relative, and

In like manner when a perſon aſks a queſtion, his expreſſion is frequently incomplete; but the tone of his voice, or ſome other circumſtance, enables us to aſcertain his meaning, and to ſupply, if we pleaſe, the words that are omitted. Thus when it is ſaid, *An feciſti?* nothing more is *expreſſed* than, *If you did it* (the Latin *an* being nothing elſe but the Greek *αν*, *ſi*); but ſome circumſtance enables the perſon who hears it to know that the meaning is, "Say if you did it." Let us apply theſe obſervations to the words *who* and *which*. If theſe words be *relatives*, and if our analyſis of the relative be juſt, it is obvious, that no *complete* meaning can be contained in the clauſe, "Who is your principal friend?" for that clauſe contains nothing more than the circumſtance of *being your principal friend* predicated *of* ſome *unknown* perſon; "of he is your principal friend." That this is indeed the caſe, every man may be convinced, by aſking himſelf what he means by the interrogative *who* in ſuch a ſentence; for he will find it impoſſible to affix to it *any* meaning without ſupplying an *antecedent clauſe*, by which that which is *called* an *interrogative* will be immediately converted into the *relative pronoun*. The cuſtom, however, of language, and the tone of voice with which the *relative clauſe* is uttered, intimates, without the help of the *antecedent*, the wiſh of the ſpeaker to be informed by the perſon addreſſed of the name and deſignation of his principal friend; and we know that the ſentence when completed is, "*Tell me the name and deſignation of the perſon* who is your principal friend." Again, when the prophet ſays, "Who is this that cometh from Edom, with dyed garments from Bozrah?" he utters but *part* of a ſentence, which when completed will run thus: "*Deſcribe the perſon* who cometh from Edom (this is that *perſon*), with dyed garments from Bozrah." He *ſees* a perſon coming from Edom, of whoſe name and deſignation he is ignorant; he calls upon ſome one for information concerning theſe particulars ; and that there may be no miſtake, he deſcribes the unknown perſon as having *dyed garments from Bozrah* ; but leſt even that deſcription ſhould not be ſufficiently accurate, he throws in the definitive clauſe, *this is that perſon*, pointing at him, we may ſuppoſe, with his finger.—*Which*, uſed as an interrogative, indicates a wiſh of knowing a particular perſon or thing out of more than one mentioned ; as, "Which of the two did it ?" that is, "*Tell me the one* of the two which did it ?" for in old Engliſh *which* as a *relative* is often uſed, where in modern Engliſh we ſhould ſay *who* ; and that mode of ſpeech is ſtill retained when the antecedent is omitted, and the relative clauſe employed to indicate ſuch a wiſh as that before us. *What* includes in itſelf the ſignification of a *definitive* and a *relative pronoun* ; as, "from *what* has gone before, *what* follows may eaſily be gueſſed ;" where the word *what* is equivalent to *that which*. When therefore we ſay, "What rude fellow is that ?" our meaning is, "*Deſcribe* that *perſon* who is that rude fellow." Upon the whole, then, it is evident, that the words called *interrogatives* are merely *relative pronouns* ; and that the interrogative *ſentences* are *relative clauſes* uttered in ſuch circumſtances as to enable the hearer to ſupply the antecedents neceſſary to complete the meaning.

54 Interrogative ſentences relative clauſes.

56. To conclude: We have ſeen that SUBSTANTIVES are either *primary* or *ſecondary* ; or, in other words, NOUNS or PRONOUNS. NOUNS denote *ſubſtances*, and thoſe either *natural*, *artificial*, or *abſtract*. They moreover denote things either *general*, or *ſpecial*, or *particular* ; and a *general* or *ſpecific* name is made to denote an *individual* by means of words called *articles* or *definitives*. PRONOUNS are the ſubſtitutes of NOUNS, and are either *prepoſitive* or *ſubjunctive*. The PREPOSITIVE is diſtinguiſhed into *three* orders, called the *firſt*, the *ſecond*, and the *third* perſon. The SUBJUNCTIVE, otherwiſe called the RELATIVE, includes the powers of all thoſe three, having *ſuperadded* as of its own the peculiar force of a *connective*.

CHAPTER IV.

Of VERBS.

57. THE words which we have hitherto conſidered are commonly called *ſubſtantives* primary or ſecondary, and *definitives* ; becauſe *nouns* are ſignificant of *ſubſtances* ; *pronouns* are the ſubſtitutes of *nouns* ; and the *article* ſerves to aſcertain the *extent* of the *noun*, and to determine whether on any occaſion it be ſignificant of a whole *claſs* of ſubſtances, or only of *one individual*. But ſubſtances are of importance to mankind only on account of their various *qualities* or *attributes* ; for their internal texture is a thing of which we are profoundly ignorant, and with which we have no manner of concern. Thus, experience teaches us, that certain vegetables are pleaſant to the taſte, and wholeſome food ; whilſt others are unpleaſant and poiſonous. The former kinds are valuable only for their *qualities* or *attributes* ; and they are the *qualities* or *attributes* of the latter that make them worthleſs or hurtful. A horſe is ſtrong, and ſwift, and docile ; and may be trained to carry a man on a journey, or to drag a plough. It is for his *ſtrength*, *ſwiftneſs*, and *docility*, that he is the moſt valuable of all quadrupeds. One man is brave, another learned, and another eloquent ; and by poſſeſſing theſe different *qualities* or *attributes*, each is fitted for a different ſtation in ſociety. It is plain therefore, that in contemplating ſubſtances, our attention muſt be principally beſtowed upon their *qualities*, and that the claſs of words which ſerve to denote theſe qualities muſt be an eſſential part of language. Such words are in general called *attributives* ; and are of three ſorts, *Verbs*, *Participles*, and *Adjectives*.

55 Subſtances of importance only for their qualities or attributes.

56 There is a claſs of words called attributives—Theſe are, *verbs*, *participles*, and *adjectives*.

58. Of all the conſtituent parts of ſpeech none has given the grammarians greater trouble than the VERB. The vaſt variety of circumſtances which it blends together in one word, throws very conſiderable difficulties in the way of him who attempts to analyſe it and aſcertain its nature ; at the ſame time, that by its eminent uſe in language, it is entitled to all the attention which can be beſtowed upon it. To the diſcuſſion of the verb, Mr Harris, whoſe notions of this as of the other parts of ſpeech have been generally adopted by the ſubſequent writers on grammar, has dedicated a large proportion of his book, in which he has thrown out many excellent obſervations, mixed, as it appears to us, with ſeveral errors. We have already obſerved, that no man is ignorant when he uſes what is called a *verb* and when a *noun*. Every ſchool boy knows that the words IS, LOVETH, WALKETH, STANDETH, in *Engliſh* ; and EST, AMAT, AMATUR, AMBULAT, STAT, in *Latin*, are VERBS : he knows likewiſe that they are of different *kinds* ; that ſome of them are ſaid to be *active*, ſome *paſſive*, and ſome *neuter*. But it ſhould ſeem, that the firſt object of our inveſtigation ought to be the *characteriſtic* of the verb, or that which all theſe words have in *common*, and which conſtitutes them VERBS, diſtinguiſhing them from *every other ſpecies of words*. Now it is obvious to the ſlighteſt attention, that every verb, whether *active*, *paſſive*, or *neuter*, may be reſolved into the ſubſtantive-verb IS, and another *attributive* : for LOVETH is of the ſame import with IS *loving* ; WALKETH, with IS *walking* ; and AMAT, with AMANS EST. But *loving*, *walking*, and AMANS, are not verbs : whence it follows, that the *characteriſtic* of the *verb*, *that which conſtitutes it what it is*, and cannot be expreſſed by other words, muſt be that which is ſignified by the word IS ; and to us that appears to be neither more nor leſs than *aſſertion*.

57 The difficulty of aſcertaining the nature of the verb.

58 The characteriſtic of the verb.

ASSERTION therefore, or PREDICATION, is certainly the very ESSENCE of the *verb*, as being that part of its office, and *that part only*, which cannot be diſcharged by other kinds of words. Every other circumſtance which the verb includes, ſuch as *attribute*, *mode*, *time*, &c. it may be poſſible to expreſs by *adjectives*, *participles*, and *adverbs* ; but without a *verb* it is impoſſible to *predicate*, to affirm or deny, any one thing of any other thing. The office of the VERB, then, when ſtript of all *accidental* circumſtances, ſeems to be merely this, "To join together the ſubject and predicate of a propoſition ;" its powers are analogous to thoſe of the ſign + in *Algebra*, which does not affect the ſeparate *value* of the quantities between which it is placed, but only indicates their *union* or *coaleſcence*. To explain by an example : When we ſay, *Cicero eloquens*, *Cicero wiſe* ; theſe are imperfect ſentences, though they denote a ſubſtance and an attribute. The reaſon is, that they want an *aſſertion*, to ſhow that ſuch an attribute appertains to ſuch a ſubſtance. But when we inſert the word *was*, we join the ſubſtance and attribute together; we give notice that the *wiſdom* and *eloquence* are applied to *Cicero*, and we do nothing more; we neither increaſe the wiſdom nor diminiſh it, we neither make it real nor imaginary; for it was ſuppoſed in all its extent when the words *Cicero* and *wiſe* ſtood independent of each other. We may indeed uſe the *verb* in a form which implies not an *aſſertion only*, but likewiſe an *attribute;* as when we ſay *George writeth*, or *George walketh:* But as *whiteneſs* or any other particular colour is not of the *eſſence* of a *horſe*, an animal which is found of *all* colours; ſo in the phraſes quoted, the *attribute*, though implied, is not of the *eſſence* of the verb; for it may be equally well expreſſed by other words: *George* IS *writing*, and *George* IS *walking*, are phraſes of the very ſame import with *George writeth*, and *George walketh*.

59. In reſolving every verb, whether active, paſſive, or neuter, into the ſubſtantive-verb IS and another attributive, we have the honour to agree with all the grammarians; but to the word IS itſelf the learned author of *Hermes* has given a meaning which, as a verb, it does not admit. He obſerves, that before any thing can be the ſubject of a propoſition, it muſt *exiſt:* that all exiſtence is either *abſolute* or *qualified*, *mutable* or *immutable:* that the word IS can by itſelf expreſs *abſolute exiſtence*, but never the *qualified*, without ſubjoining the particular form; and that it ſignifies both *mutable* and *immutable* exiſtence, having in theſe caſes different meanings; altho' the ſentences which he gives as examples are evidently conſtructed in the ſame manner and conſiſt of the ſame parts of ſpeech. His examples are: of *abſolute* exiſtence, B IS; of *qualified*, B IS *an animal;* of *mutable*, *This orange* IS *ripe; of immutable*, *The diameter of the ſquare* IS *incommenſurable with its ſide*. But if *predication* be the eſſence of verb, all this is nothing to the purpoſe, and part of it is not true. It is not true that the verb IS ever varies its ſignification; for it hath as *verb* no connection with exiſtence of any kind. All ſuch circumſtances are ſuperadded to its verbal nature; or, to ſpeak more accurately, we infer ſuch circumſtances from our previous knowledge of the objects concerning which the predication is made. When we ſay "*this* orange is ripe," we do indeed mean, as Mr Harris obſerves, that it *is ſo now at this preſent* in oppoſition to *paſt* and *future* time: but it is not the verb IS, but the definitive THIS, which fixes the *time* of *maturity*, as well as the *place* of the orange; for had we ſaid, *oranges* ARE *ripe*, we might have been properly aſked, *When* and *where* are they ripe? although the ſame verb is uſed in both ſentences. Even in the ſentence "B IS," *abſolute* exiſtence (the moſt ſimple of all) is *inferred*, and not *expreſſed*, by the *verb*; and the inference is made from this obvious principle, "That when one utters a mark of *predication*, we naturally conclude that he means to predicate *ſomething* of the ſubject." If he adds no *ſpecific* predication, as B IS ROUND, we apply to B the moſt general that we can; and what other ſpecies is ſo general as *exiſtence?*

That the idea of exiſtence, conſidered as *mutable* or *immutable*, is not contained in the verb IS itſelf, but is derived from our knowledge of the objects concerning which the predication is made, appears manifeſtly from this: That if a perſon be ſuppoſed ignorant of the meaning of the words GOD and MAN, whilſt he knows that of IS; the uttering of the two propoſitions, *God is happy*, and *this man is happy*, will give him no notice of exiſtence conſidered as *mutable* or *immutable*, *temporary* or *eternal* (o). His concluſion with reſpect to theſe modes of exiſtence, if any ſuch concluſion be drawn at all, muſt be derived entirely from his previous knowledge of the nature of *God* and the nature of *man*.

Some of our readers may poſſibly think this notion of *verb* too abſtract and metaphyſical; yet what other circumſtance than *mere predication* is eſſential to that ſpecies of words? We ſay *eſſential;* for we are here inquiring, not what is expreſſed by each *individual verb*, but what it is which is equally expreſſed by *all verbs*, and which diſtinguiſhes them from the *other parts of ſpeech*. And if it be true, that every thing which the verb implies, *predication alone excepted*, may be expreſſed by other parts of ſpeech, and that *no other part of ſpeech* can *predicate;* then we think ourſelves warranted to affirm, that *ſimple predication* is the *eſſential characteriſtic* of VERB, that *every word* which predicates is a VERB, and that *nothing* is ſo which does *not predicate*.

59
An objection to our theory.

It muſt not, however, be concealed, that a doctrine very different from this has been lately maintained by a writer of diſtinguiſhed abilities. "We have *energy* expreſſed," ſays Dr Gregory (P), "and of courſe a verb conſtituted, *without affirmation*, when we wiſh or command; without *command*, when we affirm or wiſh; without *wiſh*, when we command or affirm: yet in all theſe caſes we have equally and indiſputably a verb."

That in all theſe caſes we have a *verb*, is indeed indiſputable; but we hold it to be equally indiſputable, that in all theſe caſes we have *affirmation*. The ingenious author has given no direct example of a *wiſh* or *command uttered without affirmation;* and a feeling or ſentiment which is *not uttered* has nothing to do with language: but he has given a ſentence in which there are three verbs, that in his opinion denote *no affirmation*, but a very plain *ſuppoſition*. If a *ſuppoſition* can be expreſſed without affirmation, we ſhall very readily allow that a *wiſh* or *command* may be ſo expreſſed likewiſe. The Doctor's ſuppoſition is thus expreſſed: "*Had* any puniſhment ever overtaken you for your broken vows; *were* but one of your teeth growing black, or even *were* but one of your nails growing leſs beautiful, I ſhould believe you." It is almoſt ſuperfluous to obſerve, that to every *verb* not in the infinitive mode there muſt be a *nominative*, and to every *active* verb an *object*, whatever be the arrangement of the ſentence in which ſuch verbs are found. Theſe

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(o) The truth of this obſervation may be proved by experiment, by uttering to a man of good common ſenſe theſe two propoſitions, taking care to expreſs the words *God* and *man* in a language which he does not underſtand. Thus, *Deus* is *happy*, and *hic homo* is *happy*, uttered to a man *totally* unacquainted with the Latin tongue, will convey no notice of exiſtence conſidered as *mutable* or *immutable*, &c.

(P) *THEORY of the MOODS of VERBS*, publiſhed in Vol. II. of the *TRANSACTIONS of the ROYAL SOCIETY of EDINBURGH*.

are truths known to every ſchoolboy; the reaſons of them ſhall be given afterwards. It is likewiſe undeniable, that in the ſentence before us, the nominative to *had* is *any puniſhment;* to the firſt *were, one of your teeth;* and to the ſecond, *one of your nails.* But the ſentence arranged in grammatical order, with the ſeveral nominatives before their reſpective verbs, is evidently *elliptical;* and the conjunction *if* muſt be ſupplied, as well to complete the conſtruction as to make ſenſe of the paſſage.

60 Anſwered.

If any puniſhment had ever overtaken you; *if* but one of your teeth were growing black, or even *if* but one of your nails were growing leſs beautiful, I ſhould believe you." Now it has lately been proved, by ſuch evidence as leaves no room for doubt, that *if,* though called a *conjunction,* is in fact a *verb* in the imperative mode, of the ſame import with *give;* ſo that we may ſubſtitute the one for the other without in the ſmalleſt degree altering the ſenſe. The ſentence will then run thus: "*Give* any puniſhment had ever overtaken you; *give* but one of your teeth were growing black, &c. I ſhould believe you." It is therefore ſo far from being true, that *had* and *were,* when the ſentence is completed, expreſs *no* affirmation; that it is only upon *granting* the *truth* of the *affirmation* which *they denote,* that the ſpeaker ſays "I ſhould believe you." "Any puniſhment had ever overtaken you," is plainly an affirmation; *if, give* that affirmation, *admit its truth,* "I ſhould believe you." But it cannot be ſuppoſed that *had* and *were* change their ſignifications by a mere change of place, or that by being removed from the *middle* to the *beginning* of a clauſe, they *loſe* their *original import,* and come to denote ſomething *entirely different.* Were this the caſe, every attempt to aſcertain and fix the general principles of grammar would be as ridiculous as an attempt to arreſt the courſe of time. For what purpoſe then, it may be aſked, if the verb *always* denotes *affirmation,* is it removed from the middle to the beginning of the clauſe, when *ſuppoſition* is implied as in the preſent inſtance? We anſwer, that ſuppoſition is neither more nor leſs than *conditional affirmation;* that when *ſuch* affirmation is *completely* expreſſed, the verb is *not* removed to the beginning of the clauſe; and that ſuch a removal takes place *only* when the clauſe is *elliptical,* being merely an artificial contrivance in language, to ſhow the reader or hearer that ſome ſuch word as *if,* demanding the truth of the affirmation, is *omitted* for the ſake of diſpatch. This is evident; for when the word requiring the affirmation to be granted is *ſupplied,* the verb muſt be reſtored to its place in the middle of the clauſe. Such abbreviations, and ſuch contrivances to mark them, are frequent in all languages, as will be ſeen more clearly when we come to treat of modes. Upon the whole, notwithſtanding the deference which we willingly pay to this very maſterly writer, we are compelled reluctantly to differ from him, and ſtill to think that *ſimple predication* is the *very eſſence of the* VERB.

61 The theory itſelf exemplified.

Should we be required to exemplify our theory by language, and to produce inſtances of this ſimplified verb in practice, we might anſwer, that the not being able to produce ſuch inſtances would be no good argument againſt the truth of our principles. It is the nature of language to expreſs many circumſtances by the ſame word, all of which however are not *eſſential* to diſtinguiſh the *ſpecies* to which that word belongs from the *other ſpecies* of words; and it is the nature of man to *infer* from diſcourſe many things which are not *actually expreſſed.* Perhaps, however, ſomething nearly approaching to an exemplification of our idea of a *ſimple verb* will be found in the following propoſition: "The three angles of every plane triangle *are* equal to two right angles." What other office the verb *are* here performs than ſimply to join the *ſubject* and *predicate,* it is difficult to perceive. It does not give notice of *time;* or ſuch notice, if given, is an imperfection; for the truth of the propoſition is independent on time. Neither ought it to imply *exiſtence;* for the propoſition would be true, were there neither a triangle nor a right angle in nature.

This idea of *verb,* when it is well conſidered, we hope will be found juſt; but ſhould any of our readers ſuſpect it of novelty, and on that account be diſpoſed to condemn it, we have only to requeſt that he will reſtrain his cenſure till he has examined the writings of others, and nicely obſerved the ſeveral poſtures of his own mind in diſcourſe; for meditation may perhaps ſhow him that our theory is not falſe, and inquiry will ſatisfy him that it is not novel (Q).

62 The greater part of verbs denote an attribute combined with an aſſertion.

60. But although it is certain that *aſſertion,* and aſſertion *only,* is *eſſential* to the *verb,* yet the greater part of that ſpecies of words which grammarians call *verbs* are uſed to denote an *attribute* as well as an *aſſertion;* or, in the language of *logic,* they expreſs both the *copula* and the *predicate* of a propoſition: thus, *he liveth, he writeth, he walketh,* are phraſes equivalent in all reſpects to—*he is living, he is writing, he is walking.* Now, of attributes, *ſome* have their eſſence in *motion,* as *walking; ſome* in the *privation of motion,* as *reſting;* and *others* have *nothing to do with either motion or its privation,* as *white* and *black.* But *all motion* and all *privation of motion* imply *time* as their *concomitant;* and a *ſubſtance* may have an *attribute* to-*day* which it had *not yeſterday,* and will not have to *morrow.* This is ſelf-evident; for a man may be at reſt to-*day* who *yeſterday* was *walking,* and to *morrow* will be on *horſeback;* and a ſheet of paper may have been *white* yeſterday, which to-day is lback,

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(Q) "Beſides words, which are names of ideas in the mind, there are a great many others that are made uſe of, to ſignify the *connection* that the mind gives to ideas or propoſitions one with another. The mind in communicating its thoughts to others, does not only need *ſigns* of the *ideas* it has then before it, but *others* alſo, to ſhow or intimate ſome particular *action* of its *own* at that time *relating* to thoſe ideas. This it does ſeveral ways; as IS and IS NOT are the general *marks* of the mind *affirming* or *denying.*" *Locke on Human Underſtanding.*

"Verbum eſt pars orationis variabilis, aliquid de re aliqua dici ſeu affirmari ſignificans. Vulgaris verbi definitio eſt, quod ſit pars orationis, quæ agere, pati, aut eſſe ſignificet. Sed noſtra accuratior, magiſque ex ipſa verbi cujuſvis natura petita videtur. Cæterum τὸ *affirmari* laxiore hic ſenſu accipimus, pro eo quod prædicari Dialectici appellant, quo non modo affirmationes ſtrictius ſic dictæ, ſed negationes etiam interrogationeſque includuntur." *Ruddimanni Grammaticæ Inſtitutiones;* ſee alſo *Dr Beattie's Theory of Language.*

black, and at ſome future time will be of a different colour. As, therefore, all *motions* and their *privation*, imply *time*; and as a *propoſition* may be *true one time*, which is *not* true at *another*; all VERBS, as well thoſe which denote both an *attribute* and an *aſſertion*, as thoſe which denote an *aſſertion* only, come to denote TIME alſo: Hence the origin and uſe of *tenſes*, which are ſo many different forms aſſigned to each verb, to ſhow, without altering its *principal* ſignification, the various TIMES in which the *aſſertion* expreſſed by it may be true. Whether theſe various forms of the verb be *eſſential* to *language*, it is vain to diſpute. They have place in every language with which we are acquainted; and as the uſe of the verb is to affirm one thing of another, it is abſolutely neceſſary that the *time*, when ſuch or ſuch an affirmation is *true*, be marked by *tenſes*, or ſome *other* contrivance. Concerning tenſes, therefore, we ſhall throw together ſome obſervations equally applicable to every language, after premiſing a general remark or two which ſeem neceſſary in order to proceed with preciſion.

63
All verbs denote time; hence the origin of tenſes.

61. Time, although its eſſence conſiſts in ſucceſſion continued and unbroken, may yet be conſidered by the mind as divided into an infinite number of parts. There is, however, one grand diviſion which neceſſarily occurs, and to which the different *tenſes* of *verbs* are in all languages adapted.—Computing from ſome portion conceived to be *preſent*, *all time* is either *paſt* or to *come*. Hence the *tenſes* of verbs are threefold; ſome denoting *time preſent*, ſome *time paſt*, and others *time future*.

64
All time paſt, preſent, or future; hence the tenſes of verbs are threefold.

Again, from the very *nature* of time, it muſt be obvious, that *all its parts* are *relative*; i. e. that no portion of it can be aſcertained by any thing *inherent in itſelf*, but only by referring it to ſome *other* portion, with reſpect to which it is *paſt*, *preſent*, or *to come*. In this reſpect *time* is perfectly analogous to *ſpace*: for as the *ſpace* in which any object exiſts, cannot be deſcribed but by ſtating its relation to ſome *other ſpace*; ſo neither can the *time* of any attribute or action be determined but by ſtating its relation to ſome *other time*. When, therefore, we would mark the *time* of any action or event, we muſt previouſly fix upon *ſome point* to which we may refer it. If this point be known, the time referred to it will be known alſo; but if the *former* be not known, neither will the *latter*.

Laſtly, in contemplating an *action*, we may have occaſion to conſider it as *going on*, or as *finiſhed*. This diſtinction is likewiſe denoted by the different *tenſes* of verbs. In treating therefore of the tenſes, there are two things to which attention ought principally to be turned;—the *relation* which the ſeveral tenſes have to one another in reſpect of *time*; and the *notice* which they give of an action's being *completed* or *not completed*.

65
Different grammarians have enumerated different numbers of tenſes.

62. Having premiſed thoſe remarks, we proceed now to the *tenſes* themſelves; of which Mr HARRIS has enumerated no fewer than *twelve*. Of this enumeration we can by no means approve; for, without entering into a minute examination of it, nothing can be more obvious, than that his INCEPTIVE PRESENT—*I am going to write*—is a FUTURE TENSE; and his COMPLETIVE PRESENT—*I have written*—a PAST *tenſe*. But, as was before obſerved of the *claſſification of words*, we cannot help being of opinion, that, to take the *tenſes* as they are commonly received, and endeavour to aſcertain their *nature* and their *differences*, is a much more uſeful exerciſe, as well as more proper for a work of this kind, than to raiſe, as might eaſily be done, new and hypothetical theories on the ſubject.

It has been already obſerved, that *all the tenſes* muſt neceſſarily mark *relative time*. In one ſenſe, this is extremely obvious. The *preſent* tenſe is uſed in contradiſtinction to both the *paſt* and *future*, and marks an attribute or action as exiſting in neither. The *paſt* and the *future* are in like manner uſed in contradiſtinction to the preſent; and mark an attribute or action which exiſts *not now*, but which in the one caſe *has exiſted formerly*, in the other *will exiſt* at ſome *time coming*. But beſides this relation of *contradiſtinction* ſubſiſting among the tenſes, there is another of *co-exiſtence*, as we may call it, to which it is of great conſequence to attend—eſpecially in examining the nature of the *preſent*.

66
Of the preſent tenſe.

63. The PRESENT TENSE refers not only to ſomething which is *paſt* or *future*, but alſo to ſomething with which the attribute or action of the verb is *contemporary*. This reference is neceſſarily implied in its very *name*; for we cannot ſay of any thing that it is *preſent*, without implying at the ſame time that there is ſomething elſe *with which* it is preſent. Hence it appears with how little reaſon Mr *Harris* and others have given us an *aoriſt* of the *preſent*, as marking preſent time *indefinitely* in contradiſtinction to OTHER *preſents*, which have been called *inceptive*, *extended*, and *completive preſents*. For from what has been ſaid it follows, that the preſent tenſe is *neceſſarily* and from its very nature perfectly *indefinite*, and can of itſelf give notice of no *preciſe* or *determinate portion* or *point* of time whatever. A thing may have been *preſent fifty years ago*, may be preſent *now*, or at any *future period*. This tenſe implies the relation of *co-exiſtence* between two or more things; but, without ſome auxiliary circumſtance, it cannot in any language mark the *particular portion of time* in which thoſe things *exiſt*. The *indefinite nature* of this tenſe is indeed moſt clearly ſeen in that uſe of it in which Mr *Harris* has ſtyled it the *aoriſt* of the preſent; that is, in caſes where it is employed to denote *the repetition of an action which the agent is accuſtomed frequently to perform*, or to expreſs *propoſitions of which the truth is evinced by general experience*; as in the following examples:

> " Hypocriſy——the only evil that *walks*
> " Inviſible, except to God alone."
> " *Ad pœnitendum* properat *qui cito judicat*," &c.

In theſe inſtances it is plain there is no *particular* time pointed out: the propoſitions are *true*, or *apprehended* as true, *at all times*. Although the actions, therefore, of *walking* and *haſtening* are expreſſed as *preſent*, it is impoſſible from the *expreſſions* to determine any preciſe *point of time when* they are preſent.

But if the *preſent tenſe* be thus indefinite, how, it may be aſked, are we to aſcertain the *particular time* which is intended? We anſwer, it is to be aſcertained, either *by ſtating the action of the verb as exiſting in ſome time already known*, or *by inference*. If, for example, we ſay,—" Millions of ſpiritual creatures *walk* the earth unſeen,"—the propoſition is *general*, and the *time* of *walking undetermined*. But if we add—" both *when* we *wake* and *when* we *ſleep*,"—the *time* is by this addition aſcertained and ſpecified; for if the *time* when men *wake* and *ſleep* be known, the *time* when theſe ſpirits *walk* the earth is known alſo.—When no ſpecifying clauſe is given by which to determine the *time* of the preſent tenſe, it is very commonly determined by *inference*.

ference. Thus, if one uſe ſuch an expreſſion as—"He *ſleeps* while I am *ſpeaking to him*,"—the time of his *ſleeping* is aſcertained by the ſubſequent clauſe of the ſentence; but if it be ſaid ſimply—"he ſleeps"—without aſſigning any *data* from which it may be concluded *when* his ſleeping is *preſent*, we very naturally infer that it is at the *inſtant* we *receive* the *information* of his ſleeping. Such inferences as this are common in language. The mind is deſirous to obtain *complete* information on every ſubject; and therefore frequently *ſupplies to itſelf* what is *not expreſſed* in the ſpeech of others.

Both theſe ways of aſcertaining the *preciſe time* of the *preſent* tenſe, are excellently illuſtrated by the uſe of the word *preſent* as applied to *ſpace*. Take a familiar example:—"His brother and he were *preſent* when I read the letter." It is at firſt ſight evident that this expreſſion is perfectly *indefinite*. But if it be ſaid—"His brother and he were *preſent at your houſe* when I read the letter,"—the place of action is then *determined*, by being referred to a *portion* of *ſpace* which is *known*. If no ſuch reference be made, the perſon who hears the ſpeech uttered muſt either remain ignorant of the *place* intended, or he muſt aſcertain it to himſelf by *inference*; and he will probably *infer* it to be *that* in which the ſpeaker *is* at the *time* of his uttering the indefinite ſentence. This leads us to obſerve, that ſuch inferences are not often made without ſufficient foundation. Various circumſtances may aſſiſt the reader or hearer in making them, and prevent all danger of miſtake. He may have the evidence of ſenſe, or of ſomething preceding in the diſcourſe, and a number of other particulars, to juſtify and warrant his concluſion. Thus, if when ſitting by a large fire, one pronounce the words —"I am too warm;" thoſe to whom he addreſſes his ſpeech are authoriſed to conclude, that he is too warm at the *time* of *ſpeaking*, unleſs he expreſsly prevent the drawing of that concluſion by adding ſome ſuch clauſe as—"when I wear a great coat."

It is ſtrictly demonſtrable, and hath by Mr Harris been in fact demonſtrated, that there is no ſuch thing as *preſent time*. Yet do we not only conceive time as *preſent* and *exiſting*, but frequently as *extended* to a very great degree. We ſpeak not only of the *preſent inſtant*, or the *preſent day*, but alſo of the *preſent year*, and even of the *preſent century*. This manner of conceiving time is indeed looſe and unphiloſophical; but it is ſufficient for the ordinary purpoſes of language. To expreſs time as it really is, we ought to ſay, the *paſſing day*, the *paſſing year*, and the *paſſing century*; but in common diſcourſe we denominate any portion of time *preſent*, in which the preſent *now* or *inſtant* is included, although it is obvious that *part* of that portion is *paſt*, and the *remainder* of it *future*. From the very nature of time thus conceived to be *preſent*, the tenſe now under conſideration muſt repreſent the action of the verb as commenced, and not *finiſhed*: for as time is in continued ſucceſſion, and accompanies every action; when any action is *not commenced*, it exiſts not in *any time*, though it *may* exiſt hereafter in time which is *now future*; and when it is *finiſhed*, it exiſts no longer in *time preſent*, but in *time paſt*. Hence the abſurdity of introducing into a theory of the *tenſes* an *inceptive preſent* and a *completive preſent*; for theſe terms imply each a direct contradiction.

67 The præter-imperfect.

64. After having ſaid ſo much of the *preſent tenſe*, we ſhall have but little to ſay of the PRÆTER-IMPERFECT. It ſtates an action in reſpect of *time*, as *paſt*; and in reſpect of *progreſs*, as *unfiniſhed*. *Legebam*—I was reading *at ſome paſt time*, but my reading was then *incomplete*; I had not finiſhed the *book* or the *letter*. We muſt here obſerve, however, as we did with reſpect to the *preſent tenſe*, that although the *præter-imperfect* repreſents the action as *paſt*, it does not inform us in what *preciſe portion* of *paſt time* the unfiniſhed action was *going on*: this circumſtance muſt either be given in *ſeparate words*, or be *inferred* by the hearer. If one ſay ſimply—*Legebam*, the perſon to whom he addreſſes his ſpeech will conclude, that the *time* of his *reading* is *paſt* with reſpect to the *preſent time* of his *ſpeaking*. But if he ſay,—*Legebam antequam veniſti*, he expreſsly ſtates the action of *reading* as *paſt* with reſpect to the *time* in which his *hearer came* to the *place* where *they both are at the time of ſpeaking*. The *time* of the *præter-imperfect* is always *paſt* with reſpect to the *preſent inſtant* when the *imperfect is uſed*, and of this the *tenſe itſelf* gives notice; but it may alſo be paſt with reſpect to ſome *other time*, and of this it conveys no information.

If we join two *præter-imperfects* together, the expreſſion will ſtate the co-exiſtence of two progreſſive actions, both of which were going on at a time *paſt* in reſpect of ſome *determinate time given or ſuppoſed*. "Cum tu ſcribebas ego legebam;" "when you were writing I was reading." Hence the præter-imperfect has by ſome grammarians been called *the relative preſent*; a name which, however, is by no means *excluſively* applicable to this tenſe. When the *præter-imperfect* is by the conjunction *and* joined in the ſame ſentence with a *pluſquam-perfect*, the two tenſes expreſs two actions, *both prior* to the time of *ſpeaking*; but the *one* as having *continued* after the *other* was *finiſhed*. Thus, *Eneas* ſpeaking of the deſtruction of Troy, ſays, that after having eſcaped with his father and followers, he returned to the city in queſt of his wife, and went directly to his own houſe; but there, continues he, "*irruerant* Danai, et tectum omne *tenebant*:"—"the Greeks *had ruſhed in*," that action *was over* and completed *before his arrival*; but the act of "poſſeſſing the the whole houſe," *tenebant* was *not over*, but *ſtill continuing*.

68 The aoriſt and præter-perfect.

65. But it is neceſſary that the *verb* denote actions which were *complete* or *perfect* in *paſt time*, as well as thoſe which were *incomplete* or *imperfect*. For this purpoſe, *Greek* and *Engliſh verbs* have an *aoriſt*, a *præter-perfect*, and a *pluſquam-perfect*. Of theſe the Latin has only the two laſt. The *præter-perfect* in that *language* ſuſtains a twofold character: it performs the office of the *Greek* and *Engliſh aoriſt*, as well as of the *præter-perfect* properly ſo called; that is, it denotes a finiſhed action at ſome *indefinite paſt time*, as well as at ſome time which is both *paſt* and *definite*.

In attempting to analyſe the ſignification of *complex terms*, by which we here mean words that include in their ſignification a *variety of particulars*, it is of great advantage to have theſe particulars *ſeparately* expreſſed by *different words* in another language. Now the Engliſh has reſolved the *tenſes*, which in the Greek and Latin languages are denominated the *aoriſt* and the *præter-perfect*, by means of what are commonly called *auxiliary verbs*, expreſſing the *former* by the verb *did*, and the *latter* by the verb *have*. In examining therefore

fore the *aoriſt* and *præter-perfect*, it will be of uſe to inquire into the import of *theſe verbs*.

Did is evidently the *aoriſt* of the verb *to do*; a verb of the moſt general ſignification, as it denotes *action* of *every kind*. It expreſſes the *finiſhed performance* of *ſome action*, the completion of which muſt of courſe have taken place in ſome portion of *paſt time*. "I DID *write* or *I wrote* (theſe expreſſions being equivalent) yeſterday, a month, a year ago," &c. But the import of *did* being ſo very general, it can convey no *determinate* meaning without being limited by the addition of ſome *particular action*; and this *addition*, however expreſſed is to be conſidered in the ſame light as an *accuſative caſe*, governed by the active verb *did*; for it produces exactly the ſame *effect*. 'Εγραψα, *ſcripſi*, I *did* WRITE; that is, "at *ſome paſt* time I performed the *action* of *writing*, and *finiſhed it*."

The verb *have*, which is included in the *præter-perfect*, is plainly a verb of the *preſent tenſe* denoting *poſſeſſion*. But a man may poſſeſs *one* thing as well as *another*; and therefore *have* requires *limitation*, for the very ſame reaſon that *did* requires it, namely, becauſe its ſignification is *perfectly general*. Now this *limitation*, whatever it is, muſt be conceived as the *thing poſſeſſed*; and in inſtances where *have* is limited by a *noun*, this is obvious, and univerſally acknowledged: "I *have* a gold watch," is, "I *poſſeſs* a gold watch." But to annex the ſame meaning to the word *have*, when uſed as an *auxiliary* verb, is an idea we believe not common, and which may perhaps be thought whimſical; yet what other meaning *can* be affixed to it? To ſuppoſe that words have not each a *radical* and *determinate* ſignification, is to ſuppoſe language a ſubject incapable of philoſophical inveſtigation; and to ſuppoſe, with Mr *Harris*, that there are words entirely *devoid* of ſignification, is at once to render all inquiries after the principles of grammar nugatory and ridiculous. We conceive, then, that each of the phraſes, γεγραφα επιϛολην, *ſcripſi epiſtolam*, *I* HAVE *written a letter* is equivalent to the phraſe, "I *poſſeſs* at preſent the *finiſhed action* of writing a letter." Such an expreſſion may ſound *harſh* to the *ear*, becauſe it is *not in uſe*: but we often employ expreſſions, to the *preciſe* and *proper* meaning of which we do not attend; and if the above be attentively conſidered, however aukward it may at firſt appear, nothing will be found in it either improper or abſurd.

The *aoriſt*, then, we conceive to ſtate an action as *performed* and *finiſhed* in *ſome paſt portion of time*; whilſt the *præter-perfect* repreſents the *paſt performance* and *completion* of that action as *now* poſſeſſed. And here we may hazard a conjecture why *have*, when uſed as an auxiliary verb, is always joined with a *paſt* participle; whereas *did* is joined to a word expreſſing the *ſimple action* of the verb, or, as it is called, the *preſent infinitive*. Of the expreſſion, "I *have* WRITTEN a letter," as *one* part, viz. the verb *have*, denotes *preſent time*; the other part, viz. WRITTEN, muſt denote *paſt* time, to give notice that the action is *performed* and *finiſhed*. *Did*, on the other hand, implying *paſt* time, has no occaſion for the *paſt part* of another verb to give notice of this circumſtance; for "I *did* WRITE a letter" is equivalent to, "at ſome paſt time I *performed* and finiſhed the *ſimple action of writing* a letter."

69 The principal diſtinction between theſe tenſes.

The principal diſtinction in practice between the *aoriſt* and *præter-perfect* (for the difference ſeems little in their real import) conſiſts in the *time* by which the performance of the action admits of being *particularly* ſpecified. The *præter-perfect* is always joined with a portion of time which includes the *preſent now* or *inſtant*; for otherwiſe it could not ſignify, as it always does, the *preſent poſſeſſion* of the *finiſhing* of an action. But the *aoriſt*, which ſignifies *no ſuch poſſeſſion*, is as conſtantly joined with a portion of *paſt* time which excludes the preſent *now* or *inſtant*. Thus we ſay, "I *have written* a letter *this* day, *this* week," &c.; but, "I *wrote* a letter *yeſterday*, laſt week," &c.; and to *interchange* theſe expreſſions of time in *Greek* and *Engliſh* where the *aoriſt* and *præter-perfect* have different forms, would be improper. In *Latin*, indeed, where they have but one form, the impropriety does not appear.

70 The pluſquam-perfect.

66. Beſides the tenſes already examined, which are expreſſive of *paſt time*, in moſt languages the verb has another tenſe called the *pluſquam-perfect*, in which however no difficulty occurs to detain our attention. What the *præter-imperfect* is to the *preſent tenſe*, that the *pluſquam-perfect* is to the *præter-perfect*. The verb *had* by which it is reſolved in Engliſh, being evidently the paſt time of *have*, ſufficiently explains its meaning and relation to the other tenſes: "I *had* written a letter," is equivalent to the phraſe, "I *poſſeſſed* at ſome *paſt time* the finiſhed action of writing a letter."

It is juſtly obſerved by *Dr Beattie*, that the imperfect and pluſquam-perfect are very uſeful, and may be the ſources of much elegant expreſſion; and that if one were not taught to diſtinguiſh, in reſpect of meaning as well as of form, theſe tenſes from each other, and the præterite from both, one could not pretend to underſtand far leſs to tranſlate, any good claſſic author.

71 Future tenſes.

67. Having conſidered the tenſes which imply *preſent* and *paſt* time, it now remains that we examine the import of thoſe which are expreſſive of time *future*. In Latin and Engliſh there are *two tenſes* for this purpoſe; of which the *firſt* repreſents an action in point of *time* as *not yet exiſting*, but as about to exiſt at ſome period *to come*; but it does not bring the *completion* of the action into view. The *other* aſſerts the *futurity* of an action together with its *completion*. *Scribam*, "I ſhall be writing," denotes *future* time and *incomplete action*; for it does not ſay whether I am to write for a long or for a ſhort time, or whether I ſhall *finiſh* what I promiſe to *begin*. This part of the verb, therefore, to which the Greek γραψω correſponds, is an *imperfect future*, and likewiſe an *aoriſt*. The futurity of any action, it ſhould ſeem, *may* always be computed from the time of ſpeaking: for every action muſt be *future* with reſpect to the *time* at which its futurity is *declared*: but the *time* of its futurity may be more preciſely ſpecified by fixing on ſome *other* future time to which to refer it: "I ſhall be writing after he ſhall have departed." *Shall* or *will* refers to future *time indefinitely*; and *write* or *writing* refers to an action which is indeed to *begin* and ſo far to proceed, but of which nothing is ſaid concerning the completion.

On the other hand, *ſcripſero*, "I ſhall have written," is a *perfect future* denoting complete action: for *ſhall* denotes *future time*; *written*, *finiſhed action*; and *have preſent poſſeſſion*. So that the meaning of the whole aſſertion is, is that "at ſome future period of time I ſhall poſſeſs the finiſhed action of writing. The *completion* of the action, together with the *poſſeſſion* of it, is always *future* with reſpect to the time of *aſſertion*; but, with reſpect to ſome *other* time expreſſed or underſtood, the *completion* of the action is to be *paſt*: *Promittis te ſcripturum ſi rogavero*, "you promiſe to write if I ſhall have aſked you." In this ſentence the action of *aſking* is *future* with relation to the *time* of *promiſing*, but it is *paſt* with relation to that of *writing*. This tenſe the *Latin grammarians* call the future of the *ſubjunctive mode*; but very improperly. The notice which it communicates, reſpects not the *power* or *liberty* of acting, which, as will be ſeen by and bye, is the characteriſtic of *that mode*; but the *action* itſelf. It ought therefore to be ranked among the tenſes of the *indicative mode*; for *ſcripſero* is, in every ſenſe, as really *indicative* as *ſcribam* or *ſcripturus ero*.

72 Of the tenſes of the ſubjunctive mode. 68. Theſe are all the tenſes, eſſentially different from each other, which have place in the *indicative mode* of any language with which we are acquainted (R); but as there are tenſes in the *mode* called *ſubjunctive*, which bear the *ſame names* with thoſe already examined, and which have yet a *different import*, it will be neceſſary to conſider them before we diſmiſs the ſubject of *tenſes*.

Of *modes* in general ſomething muſt be ſaid hereafter; at preſent we ſhall only obſerve, that the *mode* with which we are now concerned, is not very properly diſtinguiſhed by the *name* aſſigned to it by the *Latin grammarians*. They call it the *ſubjunctive*, becauſe it is often ſubjoined to another verb, and forms the ſecondary clauſe of a ſentence: but the mode called *indicative* frequently appears in the ſame circumſtances. The differences between theſe two modes appears to us to conſiſt in this, that the *indicative* aſſerts ſomething *directly* concerning the *action*; the *ſubjunctive*, ſomething concerning the *power* or *liberty* of the *agent* to perform it: for that the *latter aſſerts* as well as the *former*, admits not of diſpute.

73 The preſent. 69. The *preſent tenſe* of the *ſubjunctive mode*, in the learned languages, anſwers to the Engliſh auxiliaries *may* and *can*. Let us conſider theſe a little.—*May* is evidently a verb of the *preſent* tenſe denoting *liberty*. When I aſſert that I MAY *write*, I give notice that "I am under no *compulſion* to *abſtain* from writing;" that there is no impediment *from without* by which I am *reſtrained* from writing. *Can* is alſo a verb of the preſent tenſe, expreſſive of *internal power* or *ſkill*. "I *can* write" is equivalent to—"There is nothing *in myſelf* which *incapacitates* me for performing the operation of writing." This verb ſeems originally to have denoted *knowledge* or *ſkill*, and to have been afterwards extended to ſignify *power* or *ability* of *any kind*. There is little doubt of its being the ſame with the old Engliſh verb *to con*, which ſignifies *to know*. The difference between the import of theſe two verbs *may* and *can* will be beſt perceived in a familiar example. Suppoſe we ſay to one of our tranſcribers, "You *may* write a treatiſe on grammar," to which he returns for anſwer "*I cannot*:" our aſſertion evidently ſuppoſes him *at liberty* to write the treatiſe; his anſwer implies, that he is *unable* or *unſkilled* to do it. We may conclude, then, that the *preſent tenſe* of this mode contains a declaration of *preſent liberty*, *ability*, or *ſkill*; and its other tenſes will be found to have reference to the ſame capacities.

The obſervation is here to be repeated which was enlarged upon under the *preſent* of the *indicative*. The *liberty* or *ability* ſignified by this tenſe is always repreſented as *preſent*; but the *time* of this preſence is *indefinite*. If no *particular* time be *ſpecified*, we generally refer it to the time of *ſpeaking*; but *another* point may be given from which we are to compute. "When he ſhall have finiſhed, you *may* then proceed as you propoſe." Here the *liberty* of *proceeding* is ſtated as preſent, not at the time of *ſpeaking*, but at the time of his *finiſhing*, which is *future* to the time of ſpeaking. But though the *liberty*, *ability*, or *ſkill*, denoted by this tenſe, be repreſented as *preſent*, the *action itſelf* is ſtated as *contingent*; for it is not *neceſſary* that a man ſhould *perform* an action becauſe he has the *capacity* to perform it.

From this idea of the *preſent of the conjunctive* ſome of its moſt peculiar uſes ſeem capable of being explained.—And, in the firſt place, it appears to have a near affinity with the *future* of the *indicative*; inſomuch that in many inſtances they may be uſed promiſcuouſly. Without materially altering the effect of the expreſſion, we may ſay, "Dico me facturum eſſe quæ *imperet*," or "quæ *imperabit*." The reaſon of this, perhaps, may be, that with reſpect to us, *futurity* and *contingency* are in moſt caſes nearly the ſame, both being involved in equal obſcurity; and therefore it is often of little conſequence which mode of expreſſion we employ.

Secondly, The *preſent of the conjunctive* is uſed to denote

(R) On this point we ſubſcribe to the opinion of the elegant and ingenious *Dr Beattie*.—"It will perhaps occur (ſays he), that there are two *Greek tenſes*, of which I have given no account; namely, the *ſecond aoriſt*, and the *ſecond future*. The truth is, that I conſider them as unneceſſary. Their place, for any thing I know to the contrary, might at all times be ſupplied by the *firſt aoriſt* and the *firſt future*. Some grammarians are of opinion, that the *firſt aoriſt* ſignifies *time paſt in general*, and the *ſecond*, *indefinite* time *paſt*; and that the *firſt future* denotes a *nearer*, and the *ſecond* a more *remote futurity*. But this, I apprehend, is mere conjecture, unſupported by proof: and therefore I incline rather to the ſentiments of thoſe who teach, that the *ſecond future* and the *ſecond aoriſt* have no meaning different from the *firſt* future and the *firſt* aoriſt; and that they are the *preſent* and *imperfect* of ſome *abſolute theme* of the verb, and, when the other theme came into uſe, happened to be retained for the ſake of variety perhaps, or by accident, with a *preterite* and *future* ſignification. Be this as it will, as theſe tenſes are peculiar to the Greek, and have nothing correſponding to them in other tongues, we need not ſcruple to overlook them as ſuperfluous."—*The Theory of Language*, Part II. Chap. ii.

To theſe judicious obſervations we have nothing to add, but that they acquire no ſmall degree of confirmation from this circumſtance, that there are many Greek verbs which have no ſecond future, and which are yet employed to denote every poſſible modification of future time. Of the *paulo-poſt-futurum* of the Greeks we have taken note the *right* of which a perſon is poſſeſſed. "I *may* or I *can*, ſell this book." This application, which *Dr Prieſtley* conſiders as the *primary* ſignification of the tenſe, is eaſily deduced, or rather follows immediately, from the foregoing account of its import. For if one be under *no reſtraint*, either external or internal, to prevent him from performing an action, he has ſurely a *right* to perform it.

Thirdly, The *preſent* of the *ſubjunctive* is often uſed to ſignify *command* or *requeſt*; as when one ſays, "You *may give* my compliments to ſuch a perſon." This uſe of the tenſe under conſideration ſeems to have ariſen from a deſire to *ſoften* the *harſhneſs* of a command, by avoiding the appearance of claiming ſuperiority. When a man utters the above ſentence, he certainly utters *no command*, but only *aſſerts* that the perſon to whom he ſpeaks has *liberty* or *power* to do him a favour. This aſſertion, however, may contain no *new information*; and therefore the perſon *addreſſed*, reflecting upon the *intention* of the *ſpeaker* in making it, infers that it indicates a *wiſh* to *deſire* that "his compliments ſhould be made to ſuch a perſon."

74 The præter-imperfect.

70. Of the *ſubjunctive* as well as of the *indicative*, the *præter-imperfect* is evidently the *paſt time* of the *preſent*. As the latter aſſerts *liberty*, or *ability*, to perform ſome action, as exiſting *at preſent*, the former aſſerts the ſame liberty or ability to *have exiſted* in *time paſt*; but the *preciſe portion* of time paſt, in which theſe capacities exiſted, muſt be ſpecified by other words, or it will remain *unknown*. Thus in the following ſentence, "Dixi me facturum eſſe quæ *imperaret*," the time of *imperaret* is referred to that of *dixi*: the perſon having the *right* to command, is ſuppoſed to have had it at the *time* when the other *ſaid* that he would *obey*. This tenſe, as well as the preſent, ſtates the action as *going on* and *incomplete*; and alſo as *future* with reſpect to the *liberty* or *ability* to perform it. It is rendered into *Engliſh* by the verbs *could* or *might*; of which the *firſt* is the paſt time of *can*, the ſecond of *may*.

From the near affinity which the *preſent* of the *ſubjunctive* has to the *future* of the *indicative*, the tenſe now under conſideration appears, in many inſtances, as the paſt time of the *latter* as well as the *former*. Thus *Dixi me facturum quæ imperaret*, may be rendered "I ſaid that I would do whatever he might, or whatever he *ſhould*, command."

73 The præter-perfect.

71. Of the *præter-perfect*, it is ſufficient to obſerve, that as the *preſent* ſtates the agent as at *liberty* to be performing an *unfiniſhed* action; ſo this tenſe ſtates him as at liberty to perform an action conſidered as *finiſhed*. "I *may be writing* a letter when you come," i. e. "I *am at liberty to be writing* a letter when you come," "I *may have written* a letter when you come," i. e. "I *am at liberty to be in poſſeſſion of the finiſhed action* of writing a letter when you come."

It is a common mode of expreſſion to ſay, "I may have done ſuch or ſuch a thing in my time," when he who ſpeaks can have little doubt whether he has done the thing or not. In that caſe, the words *may have done*, cannot be conſidered as the *præter-perfect* of the *ſubjunctive* of the verb *do*; for it is nonſenſe to talk of *liberty*, with reſpect to the *performance* of an action, which, at the time of ſpeaking, is ſuppoſed to be *paſt* and *completed*. What then is the import of the phraſe? We are perſuaded that it is elliptical, and that the word *ſay* or *affirm* is underſtood: "I may (ſay that I) have done ſuch or ſuch a thing in my time;" for liberty or contingency can relate to actions only as they are conceived to be *preſent* or *future*.

76 The pluſquam-perfect.

72. Of all the tenſes, the moſt complex is the *pluſquam-perfect* of this mode. It combines a *paſt* and a *future* time with a *finiſhed* action. It may be conſidered as the *paſt time* both of the *perfect future* and of the *præter perfect* of the *ſubjunctive*: for it repreſents an action, *future* and *contingent* at ſome *paſt time*, as *finiſhed before* another *period ſpecified*; which period therefore, tho' *paſt* at the *time of ſpeaking*, was itſelf *future* with reſpect to the time when the futurity or contingency of the *action exiſted*. "Promiſiſti te ſcripturum fuiſſe ſi *rogaſſem*;" "You promiſed that you would write, if I ſhould have aſked you." Here the *futurity* of the action of *aſking*, which is repreſented as *complete* and *finiſhed*, is ſtated as *co-exiſting* with the *paſt promiſe*; but the *action itſelf* muſt be *poſterior* to that promiſe: it is however ſuppoſed to be *paſt* with reſpect to the action of *writing*, which is alſo *poſterior* to the promiſe.

77 Of number and perſon.

73. Before we diſmiſs the ſubject of tenſes, it may not be improper juſt to mention *number* and *perſon*; for theſe have place in every tenſe of the verb in the *learned* languages, and in many tenſes even of the *Engliſh* verb. They cannot, however, be deemed *eſſential* to the verb; for *affirmation* is the ſame, whether it be made by *you*, by *me*, or by a *third* perſon, or whether it be made by *one* man or by a *thouſand*. The moſt that can be ſaid is, that verbs in the more elegant languages are provided with a variety of terminations which reſpect the *number* and *perſon* of every *ſubſtantive*, that we may know with more preciſion, in a complex ſentence, each particular ſubſtance with its attendant verbal attributes. The ſame may be ſaid of *ſex* with reſpect to *adjectives*. They have terminations which *vary* as they reſpect beings *male* or *female*, though it is paſt diſpute that *ſubſtances alone* are ſuſceptible of *ſex*. We therefore paſs over theſe matters, and all of like kind, as being rather among the *elegancies* of *particular languages*, and therefore to be learned from the *particular grammar* of each tongue, than among the *eſſentials* of language; which *eſſentials alone* are the ſubject of inquiry in a treatiſe on *univerſal* grammar.

78 Of modes.

74. Beſides *tenſes*, *number*, and *perſon*, in every tongue with which we are acquainted, *verbs* are ſubject to another variation, which grammarians have agreed to call *Modes*. Of *modes*, as of *tenſes*, it has been warmly diſputed whether or not they be eſſential to language. The truth ſeems to be, that the only part of the verb *abſolutely neceſſary* for the purpoſe of communicating thought is the *indicative mode*; for all the others, as has been well obſerved by Dr Gregory, are reſolvable, by means of additional verbs and a word denoting the action of the primary verb, into circuitous expreſſions which

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taken no notice, becauſe it is found only in the *paſſive* voice; to which if it were neceſſary, it is obvious that it would be neceſſary in *all* voices, as a man may be about to *act* as well as to *ſuffer* immediately.

which fully convey their meaning (s). But ſuch expreſſions continually repeated would make language very prolix and wholly inanimated; for which reaſon, the import of each of the commonly received modes is a ſubject worthy of the philologiſt's inveſtigation. About the *number* of modes, whether neceſſary or only expedient, as well as about the *import* of each, the writers on grammar have differed in opinion. Mr Harris, one of the moſt celebrated of thoſe writers, has enumerated *four modes* of the verb, beſides the *infinitive*; viz. The INDICATIVE or DECLARATIVE, *to aſſert what we think certain*; the POTENTIAL or SUBJUNCTIVE, *for the purpoſes of whatever we think contingent*; the INTERROGATIVE, *when we are doubtful, to procure us information*; and the REQUISITIVE, *to aſſiſt us in the gratification of our volitions*. The requiſite too, according to him, appears under two diſtinct ſpecies; either as it is IMPERATIVE to inferiors, or PRECATIVE to ſuperiors.

79 Different opinions about the number of modes.

For eſtabliſhing ſuch a variety of modes as this, no ſort of foundation whatever appears. The ſame reaſoning which induced the author to give us an *interrogative* and *requiſitive* mode, might have made him give us a *hortative*, a *diſſuaſive*, a *volative*, and innumerable other modes, with which no language is acquainted. But beſides perplexing his reader with uſeleſs diſtinctions, we cannot help thinking that Mr Harris has fallen into ſome miſtakes with regard to the *import* of thoſe modes which are univerſally acknowledged. According to him, *aſſertion* is the characteriſtic of the *indicative*, and that which diſtinguiſhes it from the *ſubjunctive* or *potential*: but this is certainly not true, for without an *aſſertion*, the verb cannot be uſed in *any mode*. Of this the learned author, indeed, ſeems to have been aware, when he obſerved of the *ſubjunctive mode*, that it is employed "when we do not *ſtrictly* aſſert," and that "it implies but a *dubious* and *conjectural* aſſertion." The truth is, that the *aſſertion* implied in this mode, tho' it is not concerning the *ſame thing*, is equally *poſitive* and *abſolute* with that conveyed by the *indicative*. An example quoted by himſelf ſhould have ſet him right as to this matter:

> *Sed tacitus paſci ſi poſſet corvus*, HABERET
> *Plus dapis*, &c.

Who does not feel that the aſſertion contained in *haberet*, is as *abſolute* and *poſitive* as any aſſertion whatever?

75. Perhaps we may be aſked to define what we mean by a mode. We know not that we can define it to univerſal ſatisfaction. Thus much, however, ſeems to be obvious, that thoſe variations which are called *modes* do not imply DIFFERENT MODIFICATIONS *of the* ACTION *of the verb*. *Amo*, *Am*EM, *Am*A, do not ſignify *modes* of LOVING; for *modes* of loving are, *loving* MUCH, *loving* little, *loving* LONG, &c.—Shall we then get over the difficulty by ſaying, with Mr Harris, that "modes exhibit ſome way or other the *ſoul* and its *affections*? This is certainly true: but it is nothing to the purpoſe; for it does not diſtinguiſh the meaning of *mode* from the object of *language in general*, all languages being intended to exhibit the *ſoul* and its *affections*.

80 Mode defined.

Grammatical modes of verbs have been defined by Dr Gregory to be "conciſe modes of expreſſing ſome of thoſe combinations of thoughts which occur moſt frequently, and are moſt important and ſtriking." This is a juſt obſervation; but perhaps he would have given a more complete definition had he ſaid, *that grammatical modes of verbs are conciſe modes of expreſſing ſome of thoſe combinations of thoughts which occur moſt frequently and of which* ASSERTION *is an eſſential part* (T). This indeed ſeems to be the real account of the matter, eſpecially if our notion of the nature of *verb* be well founded,

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(s) The *imperative*, for inſtance, may be reſolved into a *verb* of *commanding* in the firſt perſon of the preſent of the indicative, and a word denoting the *action* of the *primary verb*, commonly called the *infinitive mode* of that verb. Thus, *I nunc et verſus tecum meditare canoros*, and "*Jubeo te* nunc ire et tecum meditari," &c. are ſentences of the very ſame import. The *ſubjunctive* may be reſolved in the ſame manner by means of a verb denoting *power* or *capacity*; for *credam*, and *poſſum credere*, may be often uſed indifferently. The *indicative mode*, however, is *not thus* convertible with another verb of affirming in the *firſt perſon* of the *preſent* of the *indicative* and a word denoting the action of the primary verb; for *Titius ſcribit*, "Titius writes," is not of the ſame import with *dico Titium ſcribere*, *quod Titius ſcribat*, "I ſay that Titius writes." The firſt of theſe ſentences, as has been already ſhown, contains but one aſſertion; the ſecond obviouſly contains two. *Titius writes* is equivalent to *Titius* IS *writing*; *I ſay that Titius writes*, is equivalent to *I* AM *ſaying that Titius* IS *writing*. The reaſon why the *imperative* and *ſubjunctive* are reſolvable into expreſſions into which the *indicative* cannot be reſolved, will be ſeen when the import of each of thoſe modes is aſcertained.

(T) Every verb, except the ſimple verb *am*, *art*, *is*, &c. expreſſes without modes a combination of thoughts, *viz*. *affirmation* and an *attribute*. The affirmation, however, alone is eſſential to the verb, for the attribute may be expreſſed by other words. It is indeed extremely probable, that in the earlieſt ages of the world, the affirmation and attribute were always expreſſed by different words; and that afterwards, for the ſake of conciſeneſs, one word, compounded perhaps of theſe two, was made to expreſs both the affirmation and the attribute: hence aroſe the various claſſes of verbs, *active*, *paſſive*, and *neuter*. Of a proceſs of this kind there are evident ſigns in the Greek and ſome other tongues. But the improvers of language did not ſtop here. The ſame love of conciſeneſs induced them to modify the compound verb itſelf, that it might expreſs various combinations of thought ſtill more complex: but in all theſe combinations *aſſertion* was of neceſſity included; for if the word had ceaſed to aſſert, it would have ceaſed to be a verb of any kind.

Soon after this ſhort note was written, and the whole article finiſhed for the preſs, we accidently met with *Pickbourn's Diſſertation on the Engliſh Verb*. Of that work it belongs not to us to give a character. Such of our readers as ſhall peruſe it, will ſee that on many points we differ widely in opinion from the author; but we have no painful apprehenſion of any compariſon which may be made. It gives us pleaſure, however, to find, that founded,—that its *eſſence* conſiſts in *affirmation*. And in this opinion we are to be more confirmed, from a conviction that no man *ever* employs language on *any occaſion* but for the purpoſe of *affirming ſomething*. The ſpeaker may affirm ſomething directly of the *action itſelf*; ſomething of the agent's *power* or *capacity* to perform it; or ſomething of his own *deſire* that it ſhould be performed, &c.—but ſtill he muſt *affirm*.

81 All modes equally indicative.

If this be ſo, then are all the modes equally *indicative*. Some may be indicative of *perceptions*, and others of *volitions*; but ſtill they all contain *indications*. On this idea the three foregoing modes of *amo* will be thus diſtinguiſhed. When a man indicates his *preſent feeling* of the paſſion of love, he uſes the firſt; when he indicates his preſent *capacity* of feeling it, he uſes the *ſecond*; and when he indicates his preſent *deſire* that the perſon to whom he is ſpeaking would entertain that paſſion, he uſes the *third*.

76. As to what Mr *Harris* calls the *interrogative* mode, he himſelf obſerves that it has a near affinity to the *indicative*. It has in fact not only a near *affinity* to it, but, as far as language is concerned, there is not between the one and the other the ſlighteſt difference. For in *written* language, take away the *mark* of *interrogation* and, in *ſpoken* language, the *peculiar tone of voice*, and the *interrogative* and *indicative* mode appear *preciſely* the *ſame*. That ſuch ſhould be the caſe is extremely natural.

To illuſtrate this, let us for once ſpeak in the ſingular number, and conceive one of our readers to be preſent. I *aſſert* a thing, taking the *truth* of it for *granted*; but if you know me to be *wrong*, I *preſume* that you will ſet me *right*: in this caſe, aſſertion produces the ſame effect as *interrogation*. Inſtances perpetually occur in common converſation. An acquaintance ſays to me—"You took a ride this morning:" I anſwer *yes* or *no* according to the caſe; and the ſame effect is produced as if he had ſaid—"Did you take a ride this morning?" In this way, at firſt, would ſimple *aſſertions* be employed to procure information wanted. *Feciſti*—you *did* ſuch a thing; feciſti *ne*—you did it *not*:—either would produce the proper reply, and the information wanted would be gained (υ). This being obſerved as language improved, men would accompany ſuch a ſentence with a peculiar *tone of voice*, or other marks, to ſignify more unequivocally that the wanted *information*, or that *ſuch information* was the *only object* of their ſpeech. Farther progreſs in refinement would lead them to alter the *poſition of the words* of a ſentence when they meant to *aſk* a *queſtion*, as we do in *Engliſh*, ſaying (when we *aſſert*), "*You have* read Euripides;" (when we *interrogate*), "*Have you* read Euripides?"

In *Greek* and *Latin*, queſtions are aſked commonly enough by the particles ει and *an*. Theſe particles we know to be exactly equivalent to the Engliſh particle *if*, at leaſt to the ſenſe in which that particle is commonly taken. *An feciſti* is "*If you did it*;" and the ſentence

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that his notions reſpecting the origin of ſuch verbs as expreſs at once *aſſertion* and an *attribute*, are the ſame with thoſe which had occurred to ourſelves.

"The copula *is* appears (ſays Mr *Pickbourn*) to have been coeval with language itſelf. But we have not the ſame evidence to convince us, that that muſt neceſſarily have been the caſe with any other finite verb; for the copula *is*, containing only an *affirmation*, is much more ſimple than a verb which unites in one word both an attribute and an affirmation. Since therefore people, in their firſt attempts to expreſs their ideas by words, would ſcarcely think of any thing more than what was abſolutely neceſſary, it is probable they would be ſome time before they invented any other word containing in itſelf an *aſſertion* or *affirmation*; for they would not very early think of contriving words ſo *complex* in their nature as to include in them both the *name* of an *action* and an *aſſertion*.

"I conjecture, that the firſt mode of expreſſing *actions* or *paſſions*; would be by *participles* or *verbal nouns*, *i. e.* words ſignifying the *names* of the *actions* or *paſſions* they wanted to deſcribe; and theſe words, connected with their ſubject by the copula *is*, might in thoſe rude beginnings of language tolerably well ſupply the place of verbs: *e. g.* from obſerving the operations of nature, ſuch words as *rain* or *raining*, *thunder* or *thundering*, would ſoon be invented; and by adding the copula *is*, they would ſay *thundering* or *thunder is* or *is not*, *raining* or *rain is*; which by the rapidity of pronunciation, might in time form the verbs *rains*, *thunders*, &c. The obſervation of their own *actions*, or the *actions* of the animals around them, would ſoon increaſe their ſtock of ideas, and put them upon contriving ſuitable expreſſions for them. Hence might ariſe ſuch words as theſe; *ſleep* or *ſleeping*, *ſtand* or *ſtanding*, *run* or *running*, *bite* or *biting*, *hurt* or *hurting*: and by joining theſe to ſubſtantives by means of the copula *is*, they might form ſuch ſentences as theſe,—*Lion is ſleeping*, or perhaps *lion ſleep is*, *ſtand is*, &c. which would ſoon be contracted into *lion ſleeps*, *ſtands*, *runs*, *bites*, *hurts*, &c. Thus our little inſulated family might become poſſeſſed of verbs including an *attribute* and an *affirmation* in one word."

This account of the origin of *active*, *paſſive*, and *neuter verbs*, is certainly ingenious; and, in our opinion, it is not more ingenious than juſt when applied to the Greek and other ancient languages, though it is not applicable to the Engliſh; but it ſeems to be quite irreconcileable with the difinition of *verb*, which the author has adopted from *Biſhop Lowth*; and indeed with every other definition except that which makes the eſſence of a *verb* to conſiſt in *ſimple affirmation*.

(υ) Of a queſtion put in the form of an aſſertion we have a remarkable inſtance in the Goſpel of St Matthew. When Chriſt ſtood before Pilate, the governor aſked him, ſaying, Σύ ει ο βασιλευς των Ιουδαιων. That this ſentence was pronounced with a view to obtain ſome anſwer, is evident from the context; yet it is as plainly an *affirmation*, though uttered probably in a ſcoffing tone, as the ſerious confeſſion of Nathaniel, Συ ει ο βασιλευς του Ισραηλ. Had not the queſtion been put in this form, which *aſſerts* Chriſt to be the king of the Jews, the reply could not have been Συ λεγεις; for without an *aſſertion* the governor would have *ſaid* nothing. See *Dr Campbell's Tranſlation of the Goſpels*, where the form uſed in the original is with great propriety retained in the verſion.

tence may either be an abbreviation for *dic an feciſti*, "tell me if you did it;" or *an* may perhaps be, as *if* certainly is, the imperative mode of ſome obſolete verb equivalent to *give*; and in that caſe, *an feciſti* will be a complete interrogative ſentence ſignifying, "you did it, *give that*."—But of the *interrogative mode* of Mr *Harris* we have ſaid enough; perhaps, our readers will think, too much, ſince it is a uſeleſs diſtinction not found in any language. It will, however, be proper to ſay ſomething of his *precative mode*, as far as it is the ſame with the *optative mode* of the Greek grammarians. And,

82 Of the optative mode.

77. Nothing, we think, can be clearer, than that the Greek *optative* conſtitutes *no diſtinct mode* of the *verb*, whatever meaning be annexed to the word *mode*. The different tenſes of the *optative* are evidently nothing but the *paſt times* of the *correſponding tenſes* of the *ſubjunctive*. Præſ. ſub. τυπτω, I *may* ſtrike. Præſ. opt. τυπτοιμι, I *might* ſtrike, &c. This is proved to be indubitably the caſe by the uniform practice of the Greek writers. Examples might be found without number were one to read in ſearch of them. The following ſentence will illuſtrate our meaning: ’Ερχονται ’Αθηναιοι ινα βοηθωσι τοις Αργειοις, "the Athenians *come* that they *may aſſiſt* the Argives." Here the leading verb ερχονται being of the *preſent* tenſe, the dependent verb βοηθωσι is the *preſent ſubjunctive*. But change the former to the *paſt time*, and the latter muſt alſo be changed. Ηρχοντω Αθηναιοι ινα βοηθοιεν τοις Αργειοις, "the Athenians *came* that they *might aſſiſt* the Argives." Here it is plain that βοηθοιεν, the preſent of the *optative*, is the *paſt time* of βοηθωσι, the preſent of the *ſubjunctive*; and the ſame in other inſtances.

It is almoſt unneceſſary to add, that when *this mode* is employed to denote a *wiſh*, the wiſh is not *expreſſed* by the *verb*, but is *underſtood*. Such abbreviated expreſſions to denote a wiſh are common in all languages. Thus, in Greek,

> Υμιν μεν θεοι δοιεν, ολυμπια δωματ’ εχοντες
> ’Εκπερσαι Πριαμοιο πολιν, &c.

ſignifies, "The gods might give you (or, as we ſay in Engliſh, *changing* the poſition of the verb, *might the gods give you*) to deſtroy," &c. So in Latin, *Ut te omnes dii deæque perdant*, "That all the gods and goddeſſes may curſe you!" Again, in Engliſh, "O that my head were waters!" &c. In all theſe, and ſuch like ſentences, the words equivalent to *I wiſh*, *I pray*, are underſtood. In Greek a *wiſh* is ſometimes introduced by the particle ει or ειτε, *if*; as in Homer,

> ’Ειθ’ οφελες τ’ αγονος τ’ εμεναι, αγαμος τ’ απολεσθαι.

"*If* it had been your fate not to be born, or to die unmarried!" The ſupplement is, "It would have been happy for your country," or ſome ſuch thing. In like manner, a poor perſon not uncommonly intreats a favour by ſaying, "Sir, *if* you would be ſo good!" Here he *ſtops*; but the completion of his ſentence is, "It would make me happy." In all theſe caſes a *wiſh* is not *formally expreſſed* by the ſpeaker, but *inferred* by the hearer. They are therefore inſtances of that tendency which mankind univerſally diſcover to abbreviate their language, eſpecially in caſes where the paſſions or feelings are intereſted.

83 Only three modes neceſſary, the indicative, ſubjunctive, and imperative.

78. The *interrogative* and *optative modes* being ſet aſide as ſuperfluous, it would appear from our inveſtigation, that the *real diſtinct modes* of the *verb*, which are found in the moſt copious and varied language, are only *three*; the *indicative*, the *ſubjunctive*, and the *imperative*: and that theſe are all that can be conſidered as *neceſſary*; the *firſt* to indicate the ſpeaker's *feeling* or *acting*, the *ſecond* to indicate his *capacity* of feeling or acting, and the third to indicate his *deſire* that the perſon to whom he ſpeaks *ſhould feel* or *act*.

Here again we have the misfortune to find ourſelves differ in opinion with Dr Gregory; who ſeems to think that a greater number of modes, if not abſolutely neceſſary, would, however be highly uſeful. His words are: "All languages, I believe, are defective in reſpect of that variety and accuracy of combination and of diſtinction, which we know with infallible certainty take place in thought. Nor do I know of any particular in which language is more deficient than in the expreſſing of thoſe *energies* or modifications of thought; ſome of which always are, and all of which might be expreſſed by the grammatical modes of verbs. Of this there cannot be a clearer proof than the well-known fact, that we are obliged to expreſs by the ſame mood very different modifications or *energies* of thought. As, for inſtance, in the caſe of the grammatical mood called the *imperative*, by which we expreſs occaſionally prayer to God, command to a ſlave, requeſt to a ſuperior, advice to an equal or to any one, order as from an officer to his ſubaltern, ſupplication to one whom we cannot reſiſt."—If theſe be, as the author calls them, *ſpecific* differences of thought, he will not ſurely object to their being all ranked under one *genus*, which may be called *deſire* (x). That the internal feelings which prompt us to pray to God, to command a ſlave, to requeſt a ſuperior, to adviſe an equal, to give an order to an inferior, and to ſupplicate one whom we cannot reſiſt, are all different in *degree*, cannot be denied. Each of them, however, is *deſire*; and the *predication*, by which the deſire is made known to the perſon whom we addreſs, is the ſame in all, when we utter a prayer as when we utter a command, when we requeſt as when we ſupplicate. But *predication alone* is that which conſtitutes the *verb*: for *deſire* by itſelf, however modified, can be expreſſed only by an *abſtract noun*; and the *mere energy* of deſire, when not applied to a particular *energiſer*, can be expreſſed only by a *participle*, or by what is commonly, though improperly called the *infinitive mode*. Now it is certainly conceivable, that a few *ſhades of meaning*, or a few (y) *degrees* of one *general energy*, might be marked by

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(x) "DESIRE;—wiſh; with eagerneſs to obtain or enjoy." *Johnſon.*

"The uneaſineſs a man finds in himſelf upon the abſence of any thing, whoſe preſent enjoyment carries the idea of delight with it, is that we call DESIRE. *Good* and *evil*, preſent and abſent, work upon the mind; but that which immediately determines the will, from time to time, to *every voluntary action*, is the uneaſineſs of DESIRE, fixed upon ſome abſent good." *Locke.*

This, whether it be ſound philoſophy or not, is ſurely ſufficient authority for uſing the word *deſire* to denote the *genus*; of which *prayer*, *command*, *advice*, *ſupplication*, &c. may be conſidered as ſo many diſtinct *ſpecies*.

(y) Dr Gregory ſeems to think, that not barely a *few*, but a *vaſt number*, of theſe *energies* might be ſo marked.

"*Affirming*

by *correſponding variations* of ſuch verbs as combine *energy* with *predication* ; and there could be no great impropriety in calling thoſe variations *modes*, or rather *modes of modes* : but that ſuch a *multiplication* of modes would be an improvement in language, is by no means evident. The verb, with the modes and tenſes which it has in all languages, is already a very complex part of ſpeech ; which few are able, and ſtill fewer inclined, to analyze : and it would ſurely be of no advantage to make it more complex by the introduction of *new modes*, eſpecially when thoſe *degrees of energy* which could be marked by them are with equal and perhaps greater preciſion marked, in the *living ſpeech*, by the different tones of voice adapted to them by nature ; and, in *written language*, by the reader's general knowledge of the ſubject, and of the perſons who may be occaſionally introduced. If there be any particular delicacy of ſentiment, or energy, which cannot thus be made known, it is better to expreſs it by a name appropriated to itſelf, together with the *ſimple* and original verb of affirmation, than to clog the *compound* verb with ſuch a multiplicity of variations as would render the acquiſition of every language as difficult as is ſaid to be that of the Chineſe written characters. The *indicative*, *ſubjunctive*, and *imperative*, are therefore all the modes of the verb which to us appear to be in any degree *neceſſary* or expedient ; and they are in fact all the modes that are really found in any language with which we are acquainted.

84 The infinitive no mode of the verb but an abſtract noun.

For the INFINITIVE, as has been already obſerved, ſeems on every account to be improperly ſtyled a *mode*. To that name it has no title which we can perceive, except that its *termination ſometimes* (for even this is not true univerſally) differs in the learned languages from the terminations of the *other parts* of the verb. Nay, if *affirmation* be, as it has been proved to be, the very *eſſence* of a verb, it will follow, that the *infinitive* is no part of the verb at all ; for it expreſſes *no affirmation*. It forms no complete ſentence by *itſelf*, nor even when *joined to a noun*, unleſs it be aided by ſome *real* part of a verb either expreſſed or underſtood. *Scribo*, *ſcribebam*, *ſcripſi*, *ſcripſeram*, *ſcribam*, *ſcripſero* ; "I am writing, I was writing, I have written, I had written, I ſhall write, I ſhall have written," do each of them contain an *affirmation*, and conſtitute a complete ſentence : but *ſcribere* "to write" *ſcripſiſſe* "to have written," affirm nothing, and are not more applicable to any one perſon than to another. In a word, the *infinitive* is nothing more than an *abſtract noun* (z), denoting *the ſimple* ENERGY *of the verb*, in conjunction with

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" *Affirming*[1] (ſays he), *denying*, *teſtifying*[1], foretelling, aſking, anſwering, *wiſhing*[3], *hoping*, *expecting*, believing, knowing, doubting, ſuppoſing, ſtipulating, being able, commanding, *praying*[3], requeſting, *ſupplicating*[3], loving, hating, fearing, deſpairing, being accuſtomed, wondering, admiring, wavering, ſwearing, *adviſing*[4], *refuſing*[2], *exhorting*[5], *diſſuading*[4], *encouraging*[5], promiſing, threatening, &c. all admit very readily of being combined with the general import of a verb." He adds, that "if every one of them had been expreſſed in all languages by variations as ſtriking as thoſe of τυπτω, τυπτοιμι, and τυπτε, they *muſt* have been acknowledged as diſtinct *moods* of the verb."

If all theſe words denote different energies of thought, which, however, may be doubted, and if all thoſe different energies, with many others for which, as the author juſtly obſerves, it is not eaſy to find names, could, like *capacity* and *deſire*, be combined with the *general action* or *energy* of *one verb* ; and if thoſe *combinations* could be marked by *correſponding variations* of that verb ; we ſhould indeed acknowledge ſuch *variations* to be diſtinct *modes*, or *modes* of *modes*, of the *verb*. But we doubt much if all this be poſſible. We are certain that it would be no improvement : for it ſeems to be evident, either that, in ſome of the modes, the radical letters of the original verb muſt be changed, and then it would ceaſe to be the ſame verb ; or that many of the modes muſt be expreſſed by words of very unmanageable length ; not to mention that the additional complication introduced by ſo many minute diſtinctions into a part of ſpeech already exceedingly complex, would render the import of the verb abſolutely unintelligible to nine-tenths even of thoſe who are juſtly ſtyled *the learned*.

(z) In our idea of the *infinitive*, we have the honour to agree with the learned and excellent *Ruddiman* : whoſe words are, "Non ineptè hic modus a veteribus quibuſdam VERBI NOMEN eſt appellatum. Eſt enim (ſi non verè ac ſemper, quod nonnulli volunt, nomen ſubſtantivum) ſignificatione certè ei maximè affinis ; ejuſque vices ſuſtinet pro omnes caſus. Et quidem *manifeſte* ſubſtantivum videtur, cum *adjectivum ei additur* neutrius generis : ut, *Cic. Att.* xiii. 28. *Cum vivere ipſum turpe ſit nobis.*—Perſ. v. 53. *Velle ſuum cuique eſt.*—Cic. Fin. i. 1. *Totum hoc diſplicet philoſopheri*—Petron. c. 52. *Meum intelligere nullâ pecunia vendo.* Item, *abſque adjectivo* : ut, Ovid Met. ii. 483. *Poſſe loqui eripitur*, i. e. *poteſtas loquendi.*—Plaut. Bacch. i. 2. 50. *Hic veriri perdidit*, i. e. *verecundiam.*—Cic. Tuſc. v. 38. *Loquor de docto homine et erudito, cui vivere eſt cogitare*, i. e. *cujus vita eſt cogitatio.* [*GRAMMATICÆ LATINÆ INSTITUTIONES : Pars ſecunda*, lib. i. cap. 2. where the reader will find examples of the *infinitive* uſed by the beſt Roman writers as a ſubſtantive noun in every caſe.]

This opinion of *Ruddiman* and his ancient grammarians has been lately controverted with much ingenuity by *Dr Gregory* ; who ſeems to think, that in the *infinitive* alone we ſhould look for the *eſſence* of the verb diveſted of every accidental circumſtance, time only excepted. If this be indeed the caſe, almoſt every thing which we have ſaid of the *verb*, its *tenſes*, and its *modes*, is erroneous ; and he who takes his principles of grammar from the *Encyclopædia*, will fill his head with a farrago of abſurdities. The writer of the article, however, has been at much pains to acquire correct notions of the ſubject : he has ſtudied the writings of others ; he has with *time*; and is not a *mode*, as far as we can conceive, of any thing. Thus, *Scire tuum nihil eſt*, is the ſame with *Scientia tua nihil eſt*; and, "*Death* is certain," with "*To die* is certain."

85 Of expreſſing commands by the future tenſe.

79. Before we diſmiſs the ſubject of *modes*, it may not be improper to take notice of the connection which Mr *Harris*, after *Apollonius*, has found between *commanding* and *futurity*. "Intreating and commanding (he ſays) have a neceſſary reſpect to the *future only*. For what have they to do with the *preſent* and the *paſt*, the natures of which are immutable and neceſſary." This is ſurely confounding *commands* with the *execution* of commands. But the learned writer proceeds to inform us, that "it is from the *connection* of *futurity* with *commands*, that the *future* of the *indicative* is ſometimes uſed for the *imperative mode*." The *connection*, of which he ſpeaks, appears to us entirely imaginary; for *futurity* has nothing to do with *commands*, though it may with the *execution* of them. The *preſent time* is the time of *commanding*, the future of *obeying*. But ſuppoſing the connection *real*, it would not account for the *future tenſes* being uſed *imperatively*. For although it were true, as it is evidently falſe, that commands are *future*, it would not follow that the relation is *convertible*, or that employing the *future* ſhould imply a *command*. The principle upon which ſuch expreſſions as, THOU SHALT NOT KILL, come to have the force of a *command*, ſeems to be this. When a perſon, eſpecially one poſſeſſed of authority, aſſerts that an *action*, depending on the *will* of a *free agent*, and therefore in its own nature *contingent*, *ſhall* or ſhall *not* actually take place; what are we to *conclude* from ſuch an aſſertion? Why ſurely it is natural to conclude, that it is his *will*, his *command*, that his aſſertion be *verified*. The Engliſh word *ſhall*, if we be well informed, denoted originally *obligation*; a ſenſe in which its paſt tenſe *ſhould* is

ſtill

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has conſulted ſeveral perſons of undoubted learning, who have devoted a great part of their time to grammatical inveſtigations; and he is extremely unwilling to ſuppoſe, that all his inquiries reſpecting the moſt important part of ſpeech have ended in error. He truſts, therefore, that he ſhall not be deemed a petulant caviller, though he examine with ſome ſeverity the principal obſervations and arguments upon which the Doctor has built his theory. Upon that examination he enters with diffidence: for the learned Profeſſor's knowledge of the various powers of the mind appears, even in this eſſay, to be ſuch as eminently qualifies him for aſcertaining the preciſe import of *every* ſpecies of words employed for the purpoſe of communicating thought; and with ſuch a man the preſent writer would be much happier to agree than to differ in opinion.

The Doctor acknowledges (Tranſact. of the Royal Society, Edinburgh, Vol. II. lit. claſs, p. 195), that the *infinitive* is moſt improperly called a *mode*: and on that account he thinks we ought to turn our thoughts *excluſively to it*, "when we endeavour to inveſtigate the general import of the verb with a view to aſcertain the *accident* which it denotes; and be led, ſtep by ſtep, to form a diſtinct notion of what is *common* in the *accidents* of all verbs, and what is *peculiar* in the *accidents* of the ſeveral claſſes of them, and thereby be enabled to give good definitions, ſpecifying the *eſſence* of the verb," &c. It may be true, that to the *infinitive excluſively* we ſhould turn our attention, when we wiſh to aſcertain the *accident* denoted by a *particular verb* or claſs of verbs; i. e. *the kind of action, paſſion*, or *ſtate of being*, of which, ſuperadded to affirmation, that verb or claſs of verbs is expreſſive: but in *accidents* of this kind, it may be doubted if there be any thing that with propriety can be ſaid to be *common* to *all* verbs. There ſeems indeed to be nothing *common* to *all* verbs, but that which is *eſſential* to them, and by which they are diſtinguiſhed from *every other part* of ſpeech; but every kind of *action*, *paſſion*, and *ſtate* of *being*, may be completely expreſſed by *participles* and *abſtract nouns*; and therefore in ſuch *accidents* we cannot find the *eſſence* of the verb, becauſe ſuch accidents diſtinguiſh it not from other parts of ſpeech. Were a man called upon to ſpecify the *eſſence* of *verſe* or *metre*, he would not ſay, that it conſiſts in the meaning of the words, or in the uſing of theſe verbs according to the rules of ſyntax. In every kind of verſe where words are uſed they have indeed a meaning, and in all good verſes they are grammatically conſtructed; but this is likewiſe the caſe in *proſe*, and therefore it cannot be the *eſſence* of *verſe*. The *eſſence* of *verſe* muſt conſiſt in ſomething which is not to be found in *proſe*, viz. a certain harmonic ſucceſſion of ſounds and number of ſyllables: and the *eſſence* of the *verb* muſt likewiſe conſiſt in ſomething which is not to be found in *any other part of ſpeech*; and that, we are perſuaded, is nothing but *affirmation*. But if *affirmation* be the very *eſſence* of the verb, it would ſurely be improper, when we endeavour to aſcertain the general import of that part of ſpeech, to turn our thoughts excluſively to a word which implies *no* affirmation; for what does not affirm, cannot in ſtrictneſs of truth be either a *verb* or the *mode* of a verb.

In the ſame page it is ſaid, that "the *indefinite* denotes that kind of thought or combination of thoughts which is common to all the other modes." In what ſenſe this is true, we are unable to conceive: it denotes indeed the ſame *accident*, but certainly not the ſame *thought* or *combination* of thoughts. In the examples quoted, *Non eſt* VIVERE *ſed* VALERE *vita*, &c. the infinitives have evidently the effect of *abſtract nouns*, and not of *verbs*; for though *vivere* and *valere* expreſs the ſame *ſtates of being* with *vivo* and *valeo*, they by no means expreſs the ſame *combination of thoughts*. VIVO and VALEO *affirm* that *I AM living*, and that *I AM well*; and he who utters theſe words muſt think *not* of *life* and *health* in the *abſtract*, but of *life* and *health* as *belonging to himſelf*. VIVERE and VALERE, on the other hand, *affirm nothing*; and he who utters them thinks only of the *ſtates of living* and of *being in health*, without applying them to any particular perſon.

The exquiſitely learned author of *The Origin and Progreſs of Language*, having ſaid that the *infinitive* is uſed either as a *noun*, or that it ſerves to connect the verb with another verb or a noun, and ſo is uſeful in ſyntax, the Doctor combats this opinion, and infers the infinitive to be truly a *verb*; becauſe "the thought expreſſed

by

ſtill commonly employed. In Engliſh, therefore, the foregoing proceſs of *inferring* a *command* from an *aſſertion* of *futurity*, ſeems to have been *reverſed*; and the word *ſhall*, from denoting a *command* or *obligation*, has come to denote *futurity* ſimply.

86 Of verbs, as they are active, paſſive, or neuter.

80. Having conſidered the *verb* in its *eſſence*, its *tenſes*, and its *modes*, we might ſeem to have exhauſted the ſubject; but there is ſtill ſomething more to be done. Grammarians have diſtinguiſhed *verbs* into ſeveral *ſpecies*; and it remains with us to enquire upon what principle in nature this diſtinction is made, and how far it proceeds. Now it muſt be obvious, that if *predication* be the eſſence of a *verb*, *all verbs*, as ſuch, muſt be of the *ſame ſpecies*; for *predication* is the *ſame* in every *propoſition*, under every *poſſible circumſtance*, and by *whomſoever it is made*. But the greater part of verbs contain the predicate as well as the predication of a propoſition; or, to ſpeak in common language, they denote an *attribute* as well as an *affirmation*. Thus, *lego* is "I am *reading*;" *ambulo*, "I am *walking*;" *ſto*, "I am *ſtanding*;" *verbero*, "I am *ſtriking*;" *verberor*, "I am *ſtricken*." But the *attributes* expreſſed by theſe verbs are evidently of different kinds; ſome conſiſting in *action*, ſome in *ſuffering*, and ſome in a ſtate of being, which is *neither active* nor *paſſive*. Hence the diſtinction of verbs, according to the *attributes* which they denote, into *active*, *paſſive*, and *neuter*. *Lego*, which is an aſſertion that I am employed in the *act of reading*, is an *active verb*; *verberor*, which is an aſſertion that I am *ſuffering* under the rod, is a *paſſive verb*, becauſe it denotes a *paſſion*; and *ſto*, which is an aſſertion that I am *ſtanding ſtill*, is ſaid to be a *neuter verb*, becauſe it denotes neither *action* nor *paſſion*. But it is ſelf-evident that there cannot be *action* without an *agent*, nor *paſſion* without

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by means of *it*, may be expreſſed in ſynonymous and convertible phraſes, in different languages, by means of other parts or moods of the verb." Of theſe ſynonymous and convertible phraſes he gives ſeveral examples, of which the firſt is taken from Hamlet's ſoliloquy. "*To be* or *not to be*, that is the queſtion," he thinks equivalent in meaning to, "The queſtion is, *whether we ſhall be or ſhall not be?*" But we are perſuaded he is miſtaken. "Whether we ſhall be or ſhall not be," is a queſtion aſking, whether we ſhall exiſt at ſome *future* and *indefinite time?* but the ſubject of Hamlet's debate with himſelf was *not*, Whether, if his conſcious exiſtence ſhould be interrupted, it would be afterwards at ſome *future* and *indefinite time reſtored? but* whether it was to *continue uninterrupted* by his exit from this world? This, we, think, muſt be ſelf-evident to every reader of the Soliloquy. It is likewiſe very obvious, that the word *queſtion* in this ſentence does not ſignify *interrogatory*, but *ſubject of debate* or *affair to be examined*; and that the word *that* ſerves for no other purpoſe than to complete the verſe, and give additional *emphaſis*, perhaps, to an inquiry ſo important. "*To be* or *not to be*, that is the queſtion," is therefore equivalent in all reſpects to "The continuance or non-continuance of my exiſtence, is the matter to be examined;" and the indefinite is here indiſputably uſed as an abſtract noun in the nominative caſe. Should it be ſaid, that the Doctor may have taken the ſentence by *itſelf*, unconnected with the *ſubject* of *Hamlet's ſoliloquy*; we beg leave to reply that the ſuppoſition is impoſſible; for, independent of the circumſtances with which they are connected, the words "*To be* or *not to be*" have no perfect meaning. Were it not for the ſubject of the ſoliloquy, from which every reader ſupplies what is wanting to complete the ſenſe, it might be aſked, "*To be* or *not to be*"—*What?* A coward, a murderer, a king, or a dead man! Queſtions all equally reaſonable, and which in that caſe could not be anſwered.

With the ſame view, to prove the infinitive to be truly a *verb*, the Doctor proceeds to remark upon the following phraſes, *Dico, credo, puto, Titium exiſtere, valere, jacere, cecidiſſe, procubuiſſe, projeciſſe Mævium, projectum fuiſſe a Mævio*; which, he ſays, have the very ſame meaning with *dico*, &c. *quod Titius exiſtat, quod jaceat, quod ceciderit*, &c. He adds, that "the *infinitives*, as thus uſed, acquire not any further meaning, in addition to the radical import of the verb with tenſe, like the proper moods; but the *ſubjunctives* after *quod* loſe their peculiar meaning as *moods*, and ſignify no more than bare *infinitives*." In the ſenſe in which this obſervation is made by the author; the very reverſe of it ſeems to be the truth. The *infinitives*, as thus uſed, acquire, at leaſt in the mind of the reader, ſomething like the power of *affirmation*, which they certainly have not when ſtanding by themſelves whereas, the *ſubjunctives* neither *loſe* nor *acquire* any meaning by being placed after *quod*. *Dico, credo, puto, Titium exiſtere, valere, jacere*, &c. when tranſlated literally, ſignify, *I ſay, believe, think, Titius to exiſt, to be well, to lie along*; a mode of ſpeaking which, though now not elegant, was common with the beſt writers in the days of *Shakeſpeare*, and is frequently to be found in the writings of *Warburton* at the preſent day. *Dico, credo, puto, quod Titius exiſtat, quod jaceat*, &c. ſignifies literally, *I ſay, believe, think, that Titius may exiſt, may lie along*, &c. Remove the verbs in the indicative mode from the former ſet of phraſes, and it will be found that the infinitives *had acquired* a meaning, when conjoined with them, which they *have not* when left by themſelves; for *Titium exiſtere, jacere*; "Titius to exiſt, to lie along," have no complete meaning, becauſe they *affirm nothing*. On the other hand, when the indicative verbs are removed, together with the wonder-working *quod*, from the latter ſet of phraſes, the meaning of the *ſubjunctives* remains in all reſpects as it was before the removal; for *Titius exiſtat, jaceat*, &c. ſignify, *Titius may exiſt, may lie along*, as well when they ſtand by themſelves as when they make the final clauſes of a compound ſentence. Every one knows, that *quod*, though often called a conjunction, is always in fact the *relative pronoun*. *Dico, credo, puto, quod Titius exiſtat*, muſt therefore be conſtrued thus: *Titius exiſtat (eſt id) quod dico, credo*, &c. "Titius may exiſt is that thing, that propoſition, which I ſay, believe, think." In the former ſet of phraſes, the *infinitives* are uſed as abſtract nouns in the accuſative caſe, denoting, in conjunction with *Titium*, one complex conception, the *exiſtence*, &c. *of Titius*: *Dico, credo, puto*; "I ſay, believe, think;" and the *object* of my ſpeech, belief, thought, is, *Titium exiſtere*, "the exiſtence of Titius."

In

87 **All verbs have a neceſſary reference to a noun in the nominative caſe.**

without a *paſſive being*; neither can we make a *predication* of *any kind*, though it denote neither *action* nor *paſſion*, without predicating *ſomething*. *All verbs*, therefore, whether *active*, *paſſive*, or *neuter*, have a neceſſary reference to ſome *noun* expreſſive of the *ſubſtance*, of which the *attribute*, denoted by the verb, is *predicated*. This noun, which in all languages muſt be in the *nominative caſe*, is ſaid to be the *nominative* of the *verb*; and in thoſe languages in which the *verb* has *perſon* and *number*, it muſt in *theſe reſpects* agree with its *nominative*.

88 **Active verbs tranſitive or intranſitive.**

Of *action*, and conſequently of *verbs denoting* action, there are obviouſly two kinds. There is an *action* which paſſes from the *agent* to ſome *ſubject*, upon which he is employed; and there is an *action* which reſpects *no object* beyond the *agent himſelf*. Thus *lego* and *ambulo* are verbs which equally denote *action*: but the action of *lego* refers to ſome *external object* as well as to the *agent*; for when a man is *reading*, he muſt be reading *ſomething*, a book, a newſpaper, or a letter, &c. whereas, the action of *ambulo* is confined wholly to the *agent*; for when a man is *walking*, he is employed upon nothing *beyond himſelf*,—his *action* produces no *effect* upon any thing external. Theſe two ſpecies of verbs have been denominated *tranſitive* and *intranſitive*; a deſignation extremely proper, as the diſtinction which gave riſe to it is philoſophically juſt. *Verbs* of both ſpecies are *active*; but the action of theſe only which are called *tranſitive*, reſpects an external object: and therefore, in thoſe languages of which the nouns have caſes, it is only after *verbs* which are *tranſitive* as well as *active*, that the *noun* denoting the *ſubject* of the action is put in the *accuſative* or *objective caſe*. *Verbs* which are *intranſitive*, though they be really *active*, are in the ſtructure of ſentences conſidered as *neuter*, and govern *no caſe*.

89 **The former only govern nouns in the accuſative caſe.**

And ſo much for that moſt important of all words the VERB. We proceed now to the conſideration of *participles*, *adjectives*, and *adverbs*; which, as they have a near relation to one another, we ſhall treat of in the ſame chapter.

CHAPTER V.

Of PARTICIPLES, ADJECTIVES, *and* ADVERBS.

SECT. I. *Of* PARTICIPLES.

90 **Participles denote an attribute combined with time.**

81. THE nature of VERBS being underſtood, that of PARTICIPLES is not of difficult comprehenſion. Every verb, except that which is called the *ſubſtantive* verb is expreſſive of an *attribute*, of *time*, and of an *aſſertion*. Now if we take away the *aſſertion*, and thus deſtroy the *verb*, there will remain the *attribute* and the *time*; and theſe combined make the eſſence of that ſpecies of words called

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In confirmation of the ſame idea, that the *infinitive* is truly a *verb*, the author quotes from *Horace* a paſſage, which, had we thought quotations neceſſary, we ſhould have urged in ſupport of our own opinion:

——Nec quicquam tibi prodeſt
Aërias TENTASSE *domos, animoque rotundum*
PERCURRISSE *polum, morituro.*

To our apprehenſion, nothing can be clearer than that TENTASSE and PERCURRISSE are here uſed as *nouns*; for if they be not, where ſhall we find a *nominative* to the verb *prodeſt?* It was certainly what is ſignified by TENTASSE *aërias domos, animoque rotundum* PERCURRISSE *polum*, that is ſaid to have been of no advantage to *Archytas* at his death. This indeed, if there could be any doubt about it, would be made evident by the two proſe verſions, which the profeſſor ſubjoins to theſe beautiful lines. The firſt of which is as follws: *Nec quicquam tibi prodeſt quod aërias domos* TENTAVERIS, *et animo* PERCURRERIS *polum*; which muſt be thus conſtrued: TENTAVERIS *aërias domos, et* PERCURRERIS *animo polum (eſt id) quod nec quicquam tibi prodeſt*. This verſion, however, is not *perfectly* accurate; for it contains *two propoſitions*, while Horace's lines contain but *one*. The ſecond, which, though it may be a crabbed inelegant ſentence, expreſſes the poet's ſenſe with more preciſion, is in theſe words; *Nec quicquam tibi prodeſt morituro tua* TENTATIO *domuum aëriarum et* CURSUS *tuus circa polum*. Having obſerved, with truth, that this ſentence has the very ſame meaning with the lines of Horace, *Dr Gregory* aſks, "Why are not *tentatio* and *curſus* reckoned verbs as well as *tentaſſe* and *percurriſſe?*" Let thoſe anſwer this queſtion who believe that any of theſe words are truly verbs; for they are ſurely as he adds, all very near akin; indeed ſo near, that the mind, when contemplating the import of each, cannot perceive the difference. Mean while, we beg leave in our turn to aſk, Why are not *tentaſſe* and *percurriſſe* reckoned *abſtract nouns* as well as *tentatio* and *curſus?* To this queſtion it is not eaſy to conceive what anſwer can be returned upon the Doctor's principles. In his theory there is nothing ſatisfactory; and what has not been done by himſelf, we expect not from his followers. On the other hand, our principles furniſh a very obvious reaſon for excluding *tentatio* and *curſus* from the claſs of *verbs*; it is, becauſe theſe words expreſs no *predication*. *Tentaſſe* and *percurriſſe* indeed denote *predication* no more than *tentatio* and *curſus*; and therefore upon the ſame principle we exclude them likewiſe from a claſs to which, if words are to be arranged according to their import, they certainly do not belong.

Should the reader be inclined to think that we have dwelt too long on this point, we beg him to reflect, that if our ideas of the eſſence of the verb and of the nature of the infinitive be erroneous, every thing which we have ſaid of modes and tenſes is erroneous likewiſe. We were therefore willing to try the ſolidity of thoſe principles which hold the eſſence of the verb to conſiſt in *energy*: and we ſelected Dr Gregory's theory for the ſubject of examination, not from any diſreſpect to the author, whom the writer of this article never ſaw; but becauſe we believe his abilities to be ſuch, that

——Si Pergama dextrâ
Defendi poſſent, etiam hac defenſa fuiſſent.

ed PARTICIPLES. Thus, take, away the *aſſertion* from the verb γραφει *writeth*, and their remains the *participle* γραφων *writing*; which, without the *aſſertion*, denotes *the ſame attribute* and the *ſame time*. After the ſame manner, *by withdrawing the aſſertion*, we diſcover γραψας *written* in εγραψε *wrote*; γραψων *about to write* in γραψει *ſhall be writing*. This is Mr *Harris's* doctrine reſpecting *participles*; which, in our opinion, is equally elegant, perſpicuous, and juſt. It has, however, been controverted by an author, whoſe rank in the republic of letters is ſuch, that we ſhould be wanting in reſpect to him, and in duty to our readers, were we to paſs his objections unnoticed.

82. It is acknowledged by *Dr Beattie*, that this, which we have taken, is the moſt convenient light in which the *participle* can be conſidered in univerſal grammar: and yet he affirms that *preſent participles* do not always expreſs *preſent time*, nor *preterite participles paſt time*; nay, that *participles* have often no connection with *time* at all. He thus exemplifies his aſſertion, in *Greek*, in *Latin*, and in *Engliſh*.

"When Cebes ſays, Ετυγχανομεν περιπατουντες εν τω του χρονου ιερω, '*We* WERE WALKING *in the temple of Saturn*,' the participle of the preſent, WALKING, is by means of the verb WERE, applied to *time paſt*; and therefore of itſelf cannot be underſtood to ſignify any ſort of time." Again, after obſerving, that in Engliſh we have but two ſimple participles, ſuch as *writing* and *written*, of which the *former* is generally conſidered as the *preſent* and the *latter* as the *paſt*, the Doctor adds, But "the participle *writing*, joined to a verb of different tenſes, may denote either *paſt* or *future* action; for we may ſay not only, *I* AM *writing*, but alſo, *I* WAS *writing* yeſterday, and *I* SHALL BE *writing* tomorrow;" whence he infers that *no time whatever* is denoted by the preſent participle. But ſurely this is a haſty inference, drawn from the doctrine of *abſolute time* and a *definite preſent*, which we have already ſhown to be groundleſs and contradictory. When we ſpeak ſimply of an action as *preſent*, we *muſt* mean that it is *preſent* with reſpect to *ſomething beſides itſelf*, or we ſpeak a jargon which is unintelligible, but we do not aſcertain the *time* of its *preſence*. From the very *nature of time*, an action may be *preſent now*, it may have *been preſent formerly*, or it may *be preſent* at ſome *future period*; but the *preciſe time* of its preſence cannot be aſcertained even by the *preſent* of the *indicative* of the *verb* itſelf; yet who ever ſuppoſed that the *preſent* of the *indicative* denotes *no time?* The *participle* of the *preſent* repreſents the *action* of the verb as *going on*; but an action cannot be going on without being *preſent in time* with ſomething. When, therefore, Cebes ſays, "We were walking in the temple of Saturn," he repreſents the action of the verb *walk* as *preſent* with ſomething; but by uſing the *verb* expreſſive of his *aſſertion* in a *paſt tenſe* he gives us to underſtand that the *action* was *not* preſent with any thing at the period of his *ſpeaking*, but at ſome *portion of time prior* to that period: what that *portion of time* was, muſt be collected from the ſubſequent parts of his diſcourſe. The ſame is to be ſaid of the phraſes *I was writing yeſterday*, and *I ſhall be writing to morrow*. They indicate, that the *action* of the verb *WRITE was preſent* with me *yeſterday*, and *will again be preſent* with me *to-morrow*. The *action*, and the *time* of action, are denoted by the *participle*; that action is *affirmed* to belong to *me* by means of the verb; and the *time at which it belonged to me* is pointed out by the *tenſes* of that verb *am*, *was*, and *ſhall be*. All this is ſo plain, that it could not have eſcaped Dr Beattie's penetration, had he not haſtily adopted the abſurd and contradictory notion of a *definite preſent*.

Of the truth of his aſſertion reſpecting *paſt participles* he gives a Greek and a Latin example. The *former* is taken from St mark: ο πιστευσας σωθησεται; and the *latter* is that which is commonly called the *perfect future* of the paſſive verb *amor*, *amatus fuero*. In the firſt inſtance, he ſays that the *participle*, though belonging to the aoriſt of the *paſt time* muſt be rendered either by the *indefinite preſent*, "he who *believeth*; or by the *future*, he who *will* believe; and the reaſon which he gives for this rendering of the word is, that "the believing here ſpoken of is conſidered as *poſterior* in time to the *enunciation* of the *promiſe*." This is indeed true, but it is not to the purpoſe; for with the *enunciation* of the promiſe, the *time* of the *participle* has no manner of concern. The time of πιστευσας depends entirely upon the time of σωθησεται, with reſpect to which it muſt *undeniably* be *paſt*. Our Lord is not here aſſerting, that he who *ſhall believe* at the *day* of *final retribution*, ſhall be *ſaved*; but that he who ſhall on that day be found to *have believed* in time *paſt*, ſhall be ſaved: and if the participle had not been expreſſive of a *finiſhed action* and a *paſt time*, the whole ſentence would have conveyed a meaning not friendly to the intereſts of the goſpel. In like manner, the time of *amatus* is referred, *not* to the time of *ſpeaking*, but to the time of *fuero*, with reſpect to which, who ſees not that it is *paſt?* The two words, taken together, contain a declaration, that he who utters them *ſhall*, at ſome time *poſterior* to that of ſpeaking, *have* BEEN *loved*; *ſhall have been loved* denotes *two times*, both *future* with reſpect to the time of *ſpeaking*; but when the time, denoted by *ſhall have*, comes to be preſent, that of the participle *loved* muſt be *paſt*, for it is declared that the *action* of it ſhall *then* be *complete* and *finiſhed*.

We conclude, then, that it is *eſſential* to a participle to expreſs both an *attribute* and *time*; and that ſuch words as denote *no time*, though they may be in the *form* of participles, as *doctus* "learned," *eloquens* "eloquent," &c. belong to *another part of ſpeech*, which we now proceed to conſider

SECT. II. *Of* ADJECTIVES.

91 Adjectives denote attributes as belonging to ſubſtances.

83. The nature of *verbs* and *participles* being underſtood, that of ADJECTIVES becomes eaſy. A *verb* implies (as we have ſaid) an *attribute*, *time*, and an *aſſertion*; a *participle* implies only an *attribute* and *time*; and an ADJECTIVE implies only an *attribute* as *belonging* to ſome *ſubſtance*. In other words, an ADJECTIVE has *no aſſertion*, and it denotes *only ſuch* an *attribute* as has not its *eſſence* either in *motion* or its *privation*. Thus, in general, the attributes of *quantity*, *quality*, and *relation*, ſuch as *many*, *few*, *great*, *little*, *black*, *white*, *good*, *bad*, *double*, *treble*, &c. are all denoted by ADJECTIVES.

92 They have the import of abſtract nouns, together with the power of a connective.

84. To underſtand the import and the uſe of this ſpecies of words, it muſt be obſerved that *every adjective* is reſolvable into a *ſubſtantive* and an *expreſſion* of *connection* equivalent to *of*. Thus, a *good man* is a *man of goodneſs*; where we ſee the *attribute* denoted by the *adjective* fully expreſſed by an *abſtract noun*. But it is

evident that the *noun goodneſs* does *not* expreſs the *whole meaning* of the *adjective good*; for every *adjective* expreſſes not only an *attribute*, but alſo the *connection* between the *attribute* and its *ſubſtance*; whereas in the *abſtract noun*, the *attribute* is conſidered as a *ſubſtance unconnected* with any *other* ſubſtance.

In the next place, it is to be obſerved, that the *connection* expreſſed by *adjectives*, like that expreſſed by *of*, is of a nature ſo *general* and *indefinite*, that the particular *kind* of connection muſt, in ſome languages, be inferred from our previous knowledge of the objects between which it ſubſiſts, or it will for ever remain unknown. This might be proved by a variety of examples, but will perhaps be ſufficiently evident from the following. *Color ſalubris* ſignifies colour that *indicates* health; *exercitatio ſalubris*, exerciſe that *preſerves* health; *victus ſalubris*, food that *improves* health; *medicina ſalubris*, medicine that *reſtores* health. In all theſe examples the *connection* expreſſed by the adjective form of *ſalubris* is different; and though it may be known from *previous experience*, there is nothing in any of the expreſſions themſelves by which it can be aſcertained. Thus, adjectives are each ſignificant of an *attribute* and *connection*; but the particular *kind* of connection is aſcertained by experience.—The uſual effect of *adjectives* in language, is to *modify or particulariſe* a *general term*, by adding ſome *quality* or *circumſtance* which may diſtinguiſh the object *meant* by that term, from the *other* objects of the *ſame ſpecies*. I have occaſion, for example, to ſpeak of a particular man, of whoſe name I am ignorant. The word *man* is too general for my purpoſe, it being applicable to *every individual* of the human ſpecies. In what way then do I proceed, in order to particularize it, ſo as to make it denote *that very man* whom I *mean* to *ſpecify*? I annex or conjoin to it ſuch words as are ſignificant of *objects* and *qualities* with which *he is connected*, and which are *not* equally applicable to *others* from whom I mean to *diſtinguiſh him*. Thus I can ſay, a *man of prudence* or a *prudent man*, a *wiſe man*, a *good man*, a *brave man*, &c. By theſe additions the general term *man* is limited, or modified and can be applied only to *certain men* to whom belong the *attributes* expreſſed by the *adjectives prudent*, *wiſe*, *good* and *brave*. If it be ſtill too general for my purpoſe, I can add to it other qualities and circumſtances, till I make it ſo particular as to be applicable to but *one individual man* in the univerſe.

93 The uſual effect of adjectives is to modify a general term.

94 The reverſe of this is ſometimes the caſe.

85. This is the way in which ADJECTIVES, are *commonly* uſed, but it is not the *only* way. Inſtead of being employed to *modify* a *ſubſtantive*, they ſometimes appear as *the principal words* in the ſentence, when the ſole uſe of the *ſubſtantive* ſeems to be to modify the *abſtract noun*, contained under the *adjective* to which that ſubſtantive is *joined*. In order to underſtand this, it will be neceſſary to attend to the following obſervations.

It may be laid down as a general propoſition, that when any term or phraſe is employed to denote a *complex conception*, the mind has a power of conſidering, in what order it pleaſes, the *ſimple ideas* of which the *complex conception* is compoſed. To illuſtrate this obſervation by an example: The word *eques* in Latin, denotes a *complex conception*, of which the *conſtituent ſimple ideas* are thoſe of *a man* and *a horſe*; with this *connection* ſubſiſting between them, that the *man* is conceived as on the *back* of the *horſe*. In the uſe of this word, it is well known that the *idea firſt* in *order*, as being the *principal ſubject* of the propoſition, is commonly *the* MAN *on the back of the horſe*; but it is not ſo always, for the mind may conſider the HORSE as the principal object. Thus when Virgil ſays,

> *Fræna Pelethronii Lapithæ gyroſque dedere,*
> *Impoſiti dorſo; atque* EQUITEM *docuere ſub armis*
> INSULTARE SOLO, *et* GRESSUS GLOMERARE *ſuperbos*—

the energies attributed to the object ſignified by EQUITEM, make it evident that the *horſe* and not the *man* is meant; for it is not the property of a *man*, *inſultare ſolo, et greſſus glomerare ſuperbos.*

The ſame obſervation holds true where the *complex object* is denoted by two or more words; an *adjective*, for inſtance, and a *ſubſtantive*. Thus in the phraſe *ſummus mons ſe inter nubila condit*, the words *ſummus mons* repreſent a *complex conception*, of which the conſtituent ideas are thoſe of *height* and *mountain*, connected together by the *adjective* form of *ſummus*. Either of theſe ideas may be the ſubject of the propoſition; and the expreſſion will accordingly admit of two different ſignifications. If *mons* be made the ſubject of the propoſition, the meaning will be, "the higheſt mountain hides itſelf among the clouds." If the *ſubſtantive* included in the radical part of *ſummus* be made the ſubject of the propoſition, the expreſſion will ſignify, "the ſummit, or higheſt part of the mountain, hides itſelf among the clouds." The latter is the true import of the ſentence.

95 Two uſes of the adjective.

86. From theſe obſervations and examples, we ſhall be enabled to underſtand the *two uſes* of the *adjective*. It is either employed, as has been already obſerved, to *reſtrict* or *modify* a *general term*; or the *abſtract ſubſtantive* contained in the *adjective* is modified by the *noun*, with which, in the concrete or adjective form, that *abſtract ſubſtantive* is joined. The firſt may be called the *direct*, the ſecond the *inverſe*, acceptation of adjectives.

The *inverſe* acceptation of *adjectives* and *participles* (for both are uſed in the ſame manner) has not, except in a very few inſtances, been noticed by any *grammarian*; yet the principle is of great extent in language. In order to explain it, we ſhall produce a few examples; which on any other principle it is impoſſible to underſtand.

Livy, ſpeaking of the abolition of the regal authority at Rome, ſays *Regnatum eſt Romæ ab* URBE CONDITA *ad* LIBERATAM *annos ducentos quadraginta quatuor*, "Monarchy ſubſiſted at Rome, *not* from the *city built* (which would convey no meaning), but from the *building of the city*, to its *deliverance*," &c. Both the participles *condita* and *liberatam* are here uſed *inverſely*; that is, the *abſtract ſubſtantives* contained in *condita* and *liberatam* are modified or reſtricted by the ſubſtantives *urbe* and *urbem*, with which they unite. Again, *Ovid*, ſpeaking of the conteſt between *Ajax* and *Ulyſſes* for the arms of *Achilles*, has theſe lines:

> *Qui, licet eloquio fidum quoque Neſtora vincat,*
> *Haud tamen efficiet,* DESERTUM *ut* NESTORA CRIMEN
> *Nullum eſſe rear.*———

Here alſo the *adjective* or *participle* DESERTUM is taken inverſely, and the *general notion of deſertion* contained in it is *modified* or rendered *particular* by being joined with the ſubſtantive NESTORA. The meaning of the paſſage is, "I will never be induced to believe that the *deſertion of Neſtor* was not a crime." Were *deſertum* to be taken *directly* as an *adjective* modifying its *ſubſtantive*, the ſentence muſt be tranſlated, "I cannot believe that *Neſtor deſerted* was not a crime." But it is evident that this is nonſenſe; as NESTOR, whether *deſerted* or *not deſerted*, could not be a *crime*.

It were eaſy to produce many more examples of adjectives taken *inverſely*; but theſe may ſuffice to illuſtrate the *general principle*, and to ſhow, that without attending to it, it is impoſſible to underſtand the ancient authors. We ſhall adduce one inſtance of it from Shakeſpeare, to evince that it is not *confined* to the *ancient* languages, though in theſe it is certainly more frequent than in the *modern*:

> "Freeze, freeze, thou bitter ſky;
> "Thou canſt not bite ſo nigh
> "As *benefits forgot*:
> "Though thou the waters warp,
> "Thy ſting is not ſo ſharp
> As *friends remember'd not*."

Here it is evident, that the *adjective* FORGOT is taken inverſely; for it is not a *benefit*, but the *forgetting* of a benefit, which bites more than the bitter ſky: and therefore, in this paſſage, the *adjective* ſerves *not* to modify the *noun*; but the noun *benefits* is employed to modify the *abſtract ſubſtantive* contained in the adjective *forgot*, which is the ſubject of the propoſition, and the principal word in the ſentence.

Had Mr *Harris* attended to this principle, and reflected upon what he could not but know, that all *adjectives* denote *ſubſtances*; not indeed *ſubſiſting by themſelves*, as thoſe expreſſed by nouns, but *concretely*, as the *attributes* of other ſubſtances; he would not have claſſed *adjectives* with *verbs*, or have paſſed ſo ſevere a cenſure upon the *grammarians* for claſſing them with *nouns*. It matters very little how *adjectives* are *claſſed*, provided their *nature* and *effect* be underſtood; but they have at leaſt as good a title to be ranked with *nouns* as with *verbs*, and in our opinion a better. To adopt Mr *Harris's* language, they are *homogeneous* with reſpect to *nouns*, as both denote *ſubſtances*; they are *heterogeneous* with reſpect to *verbs*, as they *never* do denote aſſertion.

96
Adjectives formed from ſubſtantives,

97
And from pronouns.

87. Beſides original adjectives there is another claſs, which is formed from ſubſtantives. Thus, when we ſay, *the party of Pompey, the ſtyle of Cicero, the philoſophy of Socrates*; in theſe caſes, the *party*, the *ſtyle*, and the *philoſophy* ſpoken of, receive a ſtamp and character from the perſons whom they reſpect: Thoſe perſons, therefore, perform the part of *attributes*. Hence they *actually paſs into attributives*, and aſſume as ſuch the form of *adjectives*. It is thus we ſay, the *Pompeian party*, the *Ciceronian ſtyle*, and the *Socratic philoſophy*. In like manner, for a trumpet *of braſs*, we ſay a *brazen* trumpet, and for a crown *of gold*, a *golden* crown, &c. Even *pronominal* ſubſtantives admit the like mutation. Thus, inſtead of ſaying, the book *of me*, and *of thee*, we ſay *my* book, and *thy* book; and inſtead of ſaying, the country *of us*, and *of you*, we ſay *our* country, and *your* country. Theſe words *my, thy, our, your*, &c. have therefore been properly called *pronominal adjectives*.

98
Adjectives from their nature ſhould have no variation to denote ſex, number, or perſon.

88. It has been already obſerved, and muſt be obvious to all, that *ſubſtances* alone are ſuſceptible of *ſex*; and that therefore *ſubſtantive nouns* alone would have diſtinctions reſpecting *gender*. The ſame is true with reſpect to *number* and *perſon*. An ATTRIBUTE admits of no change in its nature, whether it belong to YOU or to ME, to a MAN or a WOMAN, to ONE *man* or to MANY; and therefore the *words* expreſſive of *attributes*, ought on all occaſions, and in every ſituation, to be *fixed* and *invariable*. For as the qualities *good* and *bad*, *black* and *white*, are the ſame, whether they be applied to a *man* or a *woman*, to *many* or to *few*; ſo the word which expreſſes any one of theſe attributes ought in ſtrictneſs to admit of no alteration with *whatever ſubſtantive* it may be joined. Such is the order of nature; and that order, on this as on other occaſions, the Engliſh language moſt ſtrictly obſerves: for we ſay equally, *a good man* or *a good woman*; *good men* or *good women*; *a good houſe* or *good houſes*. In ſome languages, indeed, ſuch as *Greek* and *Latin*, of which the *nouns* admit of *caſes*, and the *ſentences* of an *inverted ſtructure*, it has been found neceſſary to endow *adjectives* with the threefold diſtinction of *gender, number*, and *perſon*; but as this is only an accidental variation, occaſioned by particular circumſtances, and not in the leaſt eſſential to language, it belongs not to our ſubject, but to the *particular* grammars of theſe tongues.

99
They have, however, one variation founded in the nature of things.

There is, however, one variation of the *adjective*, which has place in all languages, is founded in the nature of things, and properly belongs to *univerſal grammar*. It is occaſioned by comparing the *attribute* of *one* ſubſtance with a *ſimilar* attribute of *another*, and falls naturally to be explained under the next ſection.

SECT. III. *Of* ADVERBS, *and the Compariſon of* ADJECTIVES.

100
The import of adverbs.

101
The reaſon of their name.

89. As *adjectives* denote the *attributes of ſubſtances*, ſo there is an inferior claſs of words which denote the *modifications* of theſe *attributes*. Thus, when we ſay "*Cicero* and *Pliny* were both of them *eloquent*; *Statius* and *Virgil* both of them *wrote*;" the attributes expreſſed by the words *eloquent* and *wrote* are immediately referred to *Cicero, Virgil*, &c.; and as denoting the *attributes* of *ſubſtances*, theſe words, the one an *adjective* and the other a *verb*, have been both called ATTRIBUTIVES OF THE FIRST ORDER. But when we ſay, "*Pliny* was *moderately* eloquent, but *Cicero exceedingly* eloquent; *Statius* wrote *indifferently*, but *Virgil* wrote *admirably*; the words *moderately, exceedingly, indifferently*, and *admirably*, are not referable to *ſubſtantives*, but to other *attributes*; that is, to the words *eloquent* and *wrote*, the ſignification of which they *modify*. Such words, therefore, having the ſame effect upon *adjectives* that adjectives have upon *ſubſtantives*, have been called ATTRIBUTIVES OF THE SECOND ORDER. By grammarians they have been called ADVERBS; and, if we take the word VERB in its moſt *comprehenſive ſignification* (A), as including not only *verbs properly ſo called*, but alſo *every ſpecies of words*, which, whether *eſſentially* or *accidentally*, are ſignificant of the *attributes* of ſubſtances, we ſhall find the name ADVERB to

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(A) *Ariſtotle* and his followers called every word a *verb*, which denotes the predicate of a propoſition. This claſſification was certainly abſurd; for it confounds not only *adjectives* and *participles*, but even *ſubſtantives*, with *verbs*: but the authority of Ariſtotle was great; and hence the name of *adverb*, though that word attaches itſelf only to an *adjective* or *participle*, or a *verb* ſignificant of an *attribute*; it does not attach itſelf to the *pure verb*.

to be a very juſt appellation, as denoting A PART OF SPEECH, THE NATURAL APPENDAGE OF SUCH VERBS. So great is this dependence in grammatical ſyntax, that an *adverb* can no more ſubſiſt without its *verb*, i. e. without *ſome word* ſignificant of an *attribute*, than a *verb* or *adjective* can ſubſiſt without its *ſubſtantive*. It is the ſame here as in certain natural ſubjects. Every *colour*, for its exiſtence, as much requires a *ſuperficies*, as the *ſuperficies* for its exiſtence requires a *ſolid body*.

102 Adverbs denoting intenſion and remiſſion.

90. Among the attributes of ſubſtances are reckoned *quantity* and *quality*: thus we ſay a *white garment*, a *high mountain*, &c. Now ſome of theſe quantities and qualities are capable of *intenſion* or *remiſſion*; or, in other words, *one ſubſtance* may have them in a *greater* or *leſs degree* than *another*. Thus we ſay, *a garment EXCEEDINGLY white, a mountain TOLERABLY* or *MODERATELY high*. Hence, then, one copious ſource of *ſecondary attributives* or *ADVERBS* to denote theſe two, that is, *intenſion* and *remiſſion*; ſuch as *greatly, tolerably, vaſtly, extremely, indifferently*, &c.

103 Attributes of the ſame kind compared by means of ſuch adverbs.

But where there are different intenſions of the ſame attribute, they may be *compared* together: Thus, if the garment A be *EXCEEDINGLY white*, and the garment B be *MODERATELY white*, we may ſay, the garment A is *MORE white* than the garment B. This *paper* is *white*, and *ſnow* is *white*; but ſnow is *MORE white* than this paper. In theſe inſtances, the adverb MORE not only denotes *intenſion*, but *relative intenſion*: nay, we ſtop not here, as we not only denote *intenſion merely relative*, but *relative intenſion than which there is none greater*. Thus we ſay, *Sophocles* was *wiſe*, *Socrates* was *MORE wiſe* than he, but *Solomon* was the *MOST wiſe* of men. Even *verbs*, properly ſo called, which denote an *attribute* as well as an *aſſertion*, muſt admit both of *ſimple* and alſo of *comparative intenſions*; but the *ſimple verb TO BE* admits of neither the one nor the other. Thus, in the following example, *Fame he LOVETH MORE than riches; but virtue of all things he LOVETH MOST*; the words MORE and MOST denote the different *comparative intenſions* of the *attribute* included under the verb *loveth*; but the *aſſertion* itſelf, which is the *eſſential* part of the *verb*, admits neither of *intenſion* nor *remiſſion*, but is the ſame in all poſſible propoſitions.

104 The compariſon of adjectives, either by adverbs,

91. From this circumſtance of *quantities* and *qualities* being capable of *intenſion* and *remiſſion*, ariſe the COMPARISON of *adjectives*, and its different DEGREES, which cannot well be more than the two ſpecies abovementioned; one to denote *ſimple exceſs*, and one to denote *ſuperlative*. Were we indeed to introduce more degrees than theſe, we ought perhaps to introduce *infinite*, which is abſurd. For why ſtop at a limited number, when, in all ſubjects ſuſceptible of intenſion, the intermediate exceſſes are in a manner infinite? Between the firſt *ſimple white* and the ſuperlative *whiteſt*, there are infinite degrees of *more white*; and the ſame may be ſaid of *more* great, *more* ſtrong, *more* minute, &c. The doctrine of grammarians about *three* ſuch degrees of compariſon, which they call the *poſitive*, the *comparative*, and the *ſuperlative*, muſt be abſurd; both becauſe in their *poſitive* there is no *compariſon* at all, and becauſe their *ſuperlative* is a *comparative* as much as their *comparative* itſelf. Examples to evince this may be met with every where: *Socrates was the MOST WISE of all the Athenians*; *Homer was the MOST SUBLIME of all poets*, &c. In this ſentence *Socrates* is evidently compared with the *Athenians*, and *Homer* with all other poets. Again, if it be ſaid that *Socrates was MORE WISE than any other Athenian, but that Solomon was the MOST WISE of men*; is not a compariſon of *Solomon* with *mankind* in general, as plainly implied in the laſt clauſe of the ſentence, as a compariſon of *Socrates* with the *other Athenians* in the firſt?

But if both imply compariſon, it may be aſked, In what conſiſts the difference between the *comparative* and *ſuperlative*? Does the *ſuperlative* always expreſs a *greater exceſs* than the *comparative*? No: for through Socrates was the *moſt wiſe* of the *Athenians*, yet is Solomon affirmed to have been *more wiſe* than he; ſo that here a *higher ſuperiority* is denoted by the comparative *more* than by the ſuperlative *moſt*. Is this then the difference between theſe two degrees, that the *ſuperlative* implies a compariſon of *one with many*, while the *comparative* implies only a compariſon of *one with one*? No: this is not always the caſe neither. The Pſalmiſt ſays, that "he is *wiſer* (or *more wiſe*) than all his teachers;" where, though the *comparative* is uſed, there is a compariſon of *one with many*. The real difference between theſe two degrees of compariſon may be explained thus:

When we uſe the *ſuperlative*, it is in conſequence of having compared *individuals* with the *ſpecies* to which they belong, or one or more *ſpecies* with the *genus* under which they are comprehended. Thus, *Socrates was the MOST WISE of the Athenians, and the Athenians were the MOST* ENLIGHTENED *of ancient nations*. In the firſt clauſe of this ſentence, *Socrates*, although compared with the *Athenians*, is at the ſame time conſidered as *one* of them; and in the laſt, the *Athenians*, although compared with *ancient nations*, are yet conſidered as *one* of thoſe nations. Hence it is that in *Engliſh* the *ſuperlative* is followed by the prepoſition *of*, and in *Greek* and *Latin* by the *genitive caſe* of the *plural* number; to ſhow, that the object which has the pre-eminence is conſidered as *belonging to that claſs* of things with which it is *compared*.

But when we uſe the *comparative* degree, the objects *compared* are ſet in direct *oppoſition*; and the one is conſidered *not* as a *part* of the other, or as *comprehended* under it, but as ſomething altogether *diſtinct* and *belonging to a different claſs*. Thus, were one to ſay, "Cicero was *more eloquent* than the Romans," he would ſpeak abſurdly; becauſe every body knows, that of the claſs of men expreſſed by the word *Romans* Cicero was one, and ſuch a ſentence would affirm that orator to have been more eloquent than himſelf. But when it is ſaid that "Cicero was *more eloquent* than all the *other* Romans, or than *any other* Roman," the language is proper, and the affirmation true: for though the perſons ſpoken of were all of the ſame claſs or city, yet Cicero is here ſet in contradiſtinction to the reſt of his countrymen, and is not conſidered as *one* of the perſons with whom he is compared. It is for this reaſon that in Engliſh the *comparative* degree is followed by a noun governed by the word of contradiſtinction *than*, and in Latin by a noun in the *ablative caſe* governed by the prepoſition *præ* (B) either expreſſed or underſtood. We have already obſerved, that the *ablative caſe* denotes concomitancy: and therefore when an

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(B) See *Ruddimanni Grammaticæ Inſtitutiones*, *Pars ſecunda*, lib. i. cap. 2.

Although it is certainly true, that when we uſe the *ſuperlative*, we ought in propriety to conſider the things coman adjective in the comparative degree is prefixed to a noun, that noun is put in the *ablative caſe*, to denote that two things are compared together in *company*; but by means of the prepoſition, expreſſed or underſtood, that which is denoted by the *comparative adjective* is ſeen to be preferred *before* that which is denoted by the *noun*.

105 Or by inflexion.

92. We have hitherto conſidered *comparatives* as expreſſed by the words *more* and *moſt*; but the authors, or improvers of language, have contrived a method to retrench the uſe of theſe *adverbs*, by expreſſing their force by an *inflection* of the *adjective*. Thus inſtead of *more fair*, they ſay FAIRER; inſtead of *moſt fair*, FAIREST: and the ſame method of compariſon takes place both in the Greek and Latin Languages; with this difference, however, between the genius of theſe languages and ours, that we are at liberty to form the compariſon either in the one method or in the other; whereas in thoſe languages the compariſon is ſeldom if ever formed by the aſſiſtance of the adverb, but always by the inflection of the adjective. Hence this inflection is by the Greek and Latin grammarians conſidered as a *neceſſary accident* of the *adjective*; but it has reached no farther than to *adjectives*, and *participles ſharing the nature of adjectives*. The attributes expreſſed by *verbs* are as ſuſceptible of compariſon as thoſe expreſſed by *adjectives*; but they are always compared by means of *adverbs* the *verb* being too much diverſified already to admit of more variation without perplexity.

106 Comparatives ſometimes loſe their relative nature.

93. It muſt be confeſſed that *comparatives*, as well the *ſimple* as the *ſuperlative*, ſeem ſometimes to part with their *relative* nature, and to retain only their *intenſive*. Thus in the degree denoting *ſimple* exceſs:

TRISTIOR, *et lacrymis oculos ſuffuſa nitentes.* Virg.

Triſtior means nothing more than that *Venus* was *very* ſad. In the degree called the *ſuperlative* this is more uſual. Phraſes extremely common are, *Vir doctiſſimus, vir fortiſſimus*, "a moſt learned man, a moſt brave man;" i. e. *not* the *braveſt* and *moſt learned* man that ever exiſted, but a man poſſeſſing thoſe qualities *in an eminent degree*. In Engliſh, when we intimate that a certain quality is poſſeſſed in an eminent degree, without making any *direct compariſon* between it and a ſimilar quality, we do it by the *intenſive* word *very*, more commonly than by *moſt*: as, *Cicero was very eloquent*; *the mind of Johnſon was* VERY *vigorous*. The mode of expreſſion has been called the *ſuperlative* of *eminence*, to diſtinguiſh it from the *other ſuperlative*, which is *ſuperlative* upon *compariſon*. Yet it may be ſaid, that even in the *ſuperlative* of *eminence* ſomething of *compariſon* muſt be *remotely* or *indirectly* intimated, as we cannot reaſonably call a man *very* eloquent without comparing *his* eloquence with the eloquence of *other men*. This is indeed true; but we cannot therefore affirm that *compariſon* is more clearly intimated in *this ſuperlative* than in the *ſimple adjective eloquent*: for when we ſay that a man is *eloquent*, we mark between *his* eloquence and that of *other men* a diſtinction of the ſame *kind*, though not in the ſame *degree*, as when we ſay that he is *very* eloquent.

In Engliſh we diſtinguiſh the two ſuperlatives, by prefixing to the *one* the definite article *the*, to ſhow that ſomething is predicated of the object expreſſed by it, which cannot be predicated of *any other* object; and by ſubjoining the prepoſition *of*, to ſhow that the objects with which it is compared are of the ſame claſs with itſelf: as, "Solomon was *the* wiſeſt *of* men; Hector was *the* moſt valiant *of* the Trojans." To the other (C) ſuperlative we only prefix the indifinite article *a*: as, "he was *a very* good man: he was *a moſt* valiant ſoldier."

107 Adjectives which admit not of degrees of compariſon.

94. As there are ſome *qualities* which admit of *compariſon*, ſo there are others which admit of none: ſuch, for example, are thoſe which denote that *quality of bodies ariſing from their figure*; as when we ſay, a *circular* table, a *quadrangular* court, a *conical* piece of metal, &c. The reaſon is, that a million of things participating the ſame figure, participate it *equally*, if they do it at all. To ſay, therefore, that while A and B are both *quadrangular*, A is *more* or *leſs* quadrangular than B, is abſurd. The ſame holds true in all attributives denoting *definite quantities* of whatever nature: for as there can be no compariſon without *intenſion* or *remiſſion*, and as there can be no intenſion or remiſſion in *things always definite*, therefore theſe attributives can admit of no compariſon. By the ſame method of reaſoning, we diſcover the cauſe why no *ſubſtantive is ſuſceptible of theſe* degrees *of compariſon*. *A mountain* cannot be ſaid MORE TO BE *or* TO EXIST than a *mole-hill*; but the *more* or *leſs* muſt be ſought for in their quantities. In like manner, when we refer many individuals to one ſpecies, the lion A cannot be called *more a lion* than the lion B (D); but if more any thing, he is *more fierce*, *more ſwift*, or exceeding in ſome ſuch attribute. So again, in referring many ſpecies to one genus, a crocodile is not *more an animal* than a lizard; nor a tiger more than a cat: but, if any thing, the crocodile and tyger are *more bulky*, *more ſtrong*, &c. than the

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compared as of the ſame claſs; and when we uſe the *comparative*, as of different claſſes; yet is not this *diſtinction* always attended to by the beſt writers in any language. In Latin and Greek the *comparative* is ſometimes uſed, where in Engliſh we ſhould uſe the *ſuperlative*; as *dextera eſt fortior manuum*; and in the Goſpel it is ſaid, that "a grain of muſtard-ſeed is the *ſmaller* (μικροτερος) of all ſeeds, but when grown up it is the *greater* (μειζων) of herbs." Even in Engliſh, the cuſtom of the language permits us not to ſay "he is the *talleſt* of the two," it muſt be the *taller* of the two; but we cannot ſay "he is the *taller* of the *three*, it muſt be the *talleſt*. For theſe and other deviations from the general rule no reaſon is to be found in the nature of things; they are errors made proper by uſe.

(C) In Engliſh, the termination *eſt* is peculiar to the ſuperlative of *compariſon*, to which the *definite* article is prefixed. Thus we may ſay, "Homer was *the ſublimeſt* of poets;" but we cannot ſay, "Homer was *a* ſublimeſt poet." Again, we may ſay, "Homer was *a very* ſublime poet;" but not, "Homer was *the very* ſublime poet."

(D) When Pope ſays of a certain perſon, that he is "a tradeſman, meek, and *much a liar*; the laſt phraſe is the ſame with *much given* to lying, the word *liar* having the effect of an *attributive*.

the animals with which they are compared; the exceſs, as before, being derived from their attributes.

108 Adverbs divided into claſſes.

95. Of the *adverbs* or *ſecondary attributives* already mentioned, thoſe denoting *intenſion* and *remiſſion* may be called ADVERBS of QUANTITY CONTINUOUS, as *greatly*, *vaſtly*, *tolerably*, &c. *once*, *twice*, *thrice*, &c. (E) are ADVERBS of QUANTITY DISCRETE; *more* and *moſt*, *leſs* and *leſt*, to which may be added *equally*, *proportionally*, &c. are ADVERBS of RELATION. There are others of QUALITY: as when we ſay, *HONESTLY induſtrious*, *PRUDENTLY brave*; *they fought BRAVELY*, *he painted FINELY*.

And here it may be worth while to obſerve, how the ſame thing, participating the ſame eſſence, aſſumes different grammatical forms from its different relations. For example, ſuppoſe it ſhould be aſked, How differ *honeſt*, *honeſtly*, and *honeſty*? The anſwer is, They are in *eſſence* the ſame: but they differ in as much as *honeſt* is the *atttributive* of a *noun*; *honeſtly*, of a *verb* or *adjective*; and *honeſty* being diveſted of theſe its attributive relations aſſumes the power of a *noun* or *ſubſtantive*, ſo as to ſtand by itſelf.

96. The adverbs hitherto mentioned are common to *verbs of every ſpecies*; but there are ſome which are confined to *verbs properly ſo called*, that is, to ſuch verbs as denote *motions* or *energies* with their *privations*. All *motion* and *reſt* imply *time* and *place* as a kind of neceſſary coincidence. Hence, when we would expreſs the place or time of either, we have recourſe to *adverbs* formed for this purpoſe; of PLACE, as when we ſay *he ſtood THERE*, *he went HENCE*, *he came HITHER*; of time, as when we ſay, *he ſtood THEN*, *he went AFTERWARDS*, *he travelled FORMERLY*. To theſe may be added the adverbs which denote the *intenſions* and *remiſſions peculiar to MOTION*, ſuch as *ſpeedily*, *haſtily*, *ſwiftly*, *ſlowly*, &c.; as alſo adverbs of *place* made out of *prepoſitions*, ſuch as *upward* and *downward* from *up* and *down*. It may, however, be doubted whether ſome of theſe words, as well as many others, which do not ſo properly *modify attributes*, as mark ſome *remote circumſtance* attending an attribute or our way of conceiving it, are truly *adverbs*, though ſo called by the grammarians. The ſimple *affirmative* and *negative* YES and NO are called *adverbs*, though they ſurely do not ſignify that which we hold to be the very eſſence of the adverb, a *modification of attributes*. "Is he learned? *No.*" "Is he brave? *Yes.*" Here the two adverbs, as they are called, ſignify *not* any *modification* of the attributes *brave* and *learned*, but a total negation of the attribute in the one caſe, and in the other a declaration that the attribute belongs to the perſon ſpoken of.

109 The meaning of adverbs to be aſcertained by etymology.

Adverbs are indeed applied to many purpoſes; and their general nature may be better underſtood by reading a liſt of them, and attending to their etymology, than by any general deſcription or definition. Many of them ſeem to have been introduced into language in order to expreſs by *one word* the meaning of two or three; and are mere abbreviations of nouns, verbs, and adjectives. Thus, the import of the phraſe, *in what place*, is expreſſed by the ſingle word WHERE; *to what place*, by WHITHER; *from this place*, by HENCE; *in a direction aſcending*, by UPWARDS; *at the preſent time*, by NOW; *at what time*, by WHEN; *at that time*, by THEN; *many times*, by OFTEN; *not many times*, by SELDOM, &c.

110 Many of them mere abbreviations.

97. Mr *Horne Tooke* has, with great induſtry and accuracy, traced many of the Engliſh adverbs from their origin in the ancient Saxon and other northern tongues, and ſhown them to be either corruptions of other words or abbreviations of phraſes and ſentences. He obſerves, that "all adverbs ending in LY, the moſt prolific branch of the family, are ſufficiently underſtood: the termination being only the word *like* corrupted; and the corruption ſo much the more eaſily and certainly diſcovered, as the termination remains more pure and diſtinguiſhable in the other ſiſter languages, in which it is written *lick*, *lyk*, *lig*, *ligen*." He might have added, that in Scotland the word *like* is, at this day, frequently uſed inſtead of the Engliſh termination *ly*; as for a *goodly figure*, the common people ſay a *good like* figure. Upon this principle the greater part of *adverbs* are reſolved into thoſe parts of ſpeech which we have already conſidered, as *honeſtly* into *honeſt-like*, *vaſtly* into *vaſt-like*, &c. ſo that when we ſay of a man he is *honeſtly induſtrious*, we affirm that he is *honeſt-like induſtrious*, or that his *induſtry* has the *appearance* of being *honeſt*. *Adverbs* of a different termination the ſame acute writer reſolves thus: AGHAST into the paſt participle AGAZED;

"The French exclaimed,—the devil was in arms
All the whole army ſtood *agazed* on him." *Shakeſpeare.*

AGO, into the paſt participle AGONE or GONE. ASUNDER he drives from ASUNDER, *ſeparated*; the paſt participle of the Anglo Saxon verb *aſundrian*: a word which, in all its varieties, is to be found, he ſays, in all the northern tongues; and is originally from *ſond*, i. e. *ſand*. To WIT, from WITTAN *to know*; as *videlicet* and *ſcilicet*, in Latin, are *abbreviations* of *videre-licet* and *ſcire licet*. NEEDS, he reſolves into NEED IS, uſed parenthetically; as, "I muſt *needs* do ſuch a thing," "I muſt (need is) do ſuch a thing;" i. e. "I *muſt* do it, there *is need* of it." ANON, which our old authors uſe for *immediately*, *inſtantly*, means, he ſays. *in one*; i. e. *in one inſtant*, *moment*, *minute*. As,

"And right *anon* withouten more abode."
"*Anon* in all the haſte I can."

ALONE and ONLY are reſolved into ALL ONE, and ONE-LIKE. In the Dutch, EEN is *one* and ALL-EEN *alone*; and ALL-EEN-LIKE, *only*, anciently *alonely*. ALIVE is *on live*, or *in life*. Thus,

"Chriſt eterne *on live.*" *Chaucer.*

AUGHT or OUGHT; A WHIT or O WHIT; O being formerly written for the article A, or for the numeral ONE; and *whit* or *hwit*, In Saxon, ſignifying a ſmall thing, *a point* or *jot*. AWHILE, which is uſually claſſed with *adverbs*, is evidently a *noun* with the indefinite *article* prefixed; *a while*, i. e. *a time*. WHILST, anciently and more properly WHILES, is plainly the Saxon HWILE-ES, *time that*. ALOFT was formerly written ON-LOFT: As,

"And ye, my mother, my ſoveregne pleaſance
"Over al thing, *out take* Chriſt ON LOFTE." *Chaucer.*

Now, ſays Mr Horne Tooke, *lyft*, in the Anglo Saxon, is

(E) Theſe words were anciently written *one's*, *twie's thrie's*; and are merely the genitives of *one*, *two*, *three*, the ſubſtantive *time* or *turn* being omitted. Thus *How often did you write?* Anſwer *Once*, i. e. *one's time*. See *Horne Tooke's Diverſions of Purley*.

is *the air* or *the clouds*, as IN LYFTE CUMMENDE, *coming in the clouds, (St Luke.)* In the Daniſh, LUFT is *air ;* and "at ſpronge i *luften,*" *to blow up into the air*, or ALOFT. So in the Dutch, *de loef hebben*, to ſail before the wind ; *loeven*, to ply to windward ; *loef*, the weather gage, &c. From the ſame root are our other words : *Loft, lofty*, to *luff, lee, leward, lift*, &c. It would be needleſs, as the ingenious author obſerves, to notice ſuch adverbs as *afoot, adays, aſhore, aſtray, aſlope, aright, abed, aback, abreaſt, afloat, aloud, aſide, afield, aground, aland*, &c. Theſe are at firſt view ſeen for what they are. Nor ſhall we follow him through the analyſis which he has given of many other adverbs, of which the origin is not ſo obvious as of theſe. Of the truth of his principles we are ſatisfied ; and have not a doubt, but that upon thoſe principles a man converſant with our earlieſt writers, and thoroughly ſkilled in the preſent languages, may trace every Engliſh (s) adverb to its ſource, and ſhow that it is no part of ſpeech ſeparate from thoſe which we have already conſidered. The *adverbs*, however, of *affirmation* and *negation*, are of too much importance to be thus paſſed over ; and as we have never ſeen an account of them at all ſatisfactory, except that which has been given by *Horne Tooke*, we ſhall tranſcribe the ſubſtance of what he ſays concerning AYE, YEA, YES, and NO. To us theſe words have always appeared improperly claſſed with *adverbs* upon every definition which has been given of that part of ſpeech. Accordingly, our author ſays, that AYE or YEA is the imperative of a verb of northern extraction ; and means, *have, poſſeſs, enjoy*. And YES is a contraction of AY-ES, have, poſſeſs, enjoy, *that*. Thus, when it is aſked, whether a man be learned, if the anſwer be by the word YES, it is equivalent to *have that, enjoy that*, belief or that propoſition. (See what was ſaid of the nature of interrogation, Chap. IV. n° 76.

The northern verb of which *yea* is the imperative, is in Daniſh EJER, *to poſſeſs, have, enjoy*. EJA, *aye* or *yea* ; EJE, *poſſeſſion* ; EJER, *poſſeſſor*. In Swediſh it is EGA, *to poſſeſs* ; of which the imperative is JA, *aye, yea :* EGARE, *poſſeſſor*. In German, JA ſignifies *aye* or *yea ;* EIGENER, *poſſeſſor, owner* ; EIGEN, *own*. In Dutch, EIGENEN is to *poſſeſs* ; JA, *aye, yea*.

Greenwood derives NOT and its abbreviate NO from the *Latin ;* Minſhew, from the *Hebrew ;* and Junius, from the *Greek*. Our author very properly obſerves, that the inhabitants of the North could not wait for a word expreſſive of diſſent till the eſtabliſhment of thoſe nations and languages : and adds, that we need not be inquiſitive nor doubtful concerning the origin and ſignification of NOT and NO ; ſince we find that, in the Daniſh, NODIG, in the Swediſh, NODIG, and in the Dutch, NOODE, NODE, and NO, mean *averſe, unwilling*. So that when it is aſked whether a man be brave, if the anſwer be NO, it is a declaration that he who makes it is *averſe from*, or *unwilling* to *admit* that propoſition.

98. Moſt writers on grammar have mentioned a ſpecies of adverbs, which they call *adverbs* of *interrogation ;* ſuch as *where, whence, whither, how*, &c. But the truth is, that there is no part of ſpeech, which, of itſelf, denotes interrogation. A queſtion is never aſked otherwiſe than by *abbreviation*, by a *ſingle* word, whether that word be a *noun*, a *pronoun*, a *verb*, or an *adverb*. The word WHERE is equivalent to—*in what place* ; WHENCE to—*from what place ;* and how to—*in what manner*, &c. In theſe phraſes, IN *what place*, FROM *what place*, and IN *what manner*, the only word that can be ſuppoſed to have the force of an *interrogative*, is *what*, which is reſolvable into *that which :* But we have already explained, in the chapter of *Pronouns*, the principles upon which the *relative* is made to denote interrogation, and the ſame reaſoning will account for the adverbs *where, whence, whither, how*, &c. being employed as *interrogatives*. Whey we ſay, *where were you yeſterday ? whence have you come ? whither are you going ? how do you perform your journey ?* We merely uſe ſo many *abbreviations* for the following ſentence ; *tell us*, or *deſcribe to us*, THE PLACE *where* (or in which) *you were yeſterday* ; THE PLACE *whence* (or from which) *you have come ;* THE PLACE *to which you are going ;* THE MANNER *in which you perform your journey*. And ſo much for *adverbs*. We now proceed to thoſe parts of ſpeech which are uſually called *prepoſitions* and *conjunctions*, and of which the uſe is to connect the other words of a ſentence, and to combine two or more *ſimple* ſentences into *one compound* ſentence.

CHAPTER VI.

Of PREPOSITIONS, CONJUNCTIONS, *and* INTERJECTIONS

III
Objects, and of courſe ideas linked together.

99. It has been obſerved, that a man while awake is conſcious of a continued train of perceptions and ideas paſſing in his mind, which depends little upon his own will ; that he cannot to the train add a new idea ; and that he can but very ſeldom break its connection. To the ſlighteſt reflection theſe truths muſt be apparent. Our firſt ideas are thoſe which we derive from external objects making impreſſions on the ſenſes ; but all the external objects which fall under our obſervation are linked together in ſuch a manner as indicates them to be parts of one great and regular ſyſtem.

(s) The ſame reſolution might probably be made of the *Greek* and *Latin adverbs*, were we as intimately acquainted with the ſources of thoſe tongues as Mr Horne Tooke is with the ſources of the Engliſh language. "Many of the *Latin* adverbs (ſays the learned Ruddiman) are nothing elſe but *adjective nouns* or *pronouns*, having the *prepoſition* and *ſubſtantive* underſtood ; as *quo, eo, eodem*, for *ad quæ, ea, eadem, (loca)*, or *cui, ei, eidem (loco)* ; for of old theſe datives ended in *o*. Thus, *qua, hac, illac*, &c. are plainly adjectives in the *abl. ſing. femin.* the word *via* "a way," and the prepoſition *in*, being underſtood. Many of them are compounds ; as, *quomodo*, i. e. *quo modo* ; *quemadmodum*, i. e. *ad quem modum* ; *quamobrem*, i. e. *ob quam rem* ; *quare*, i. e. *(pro) qua re* ; *quorſum*, i. e. *verſus quem (locum)* ; *ſcilicet*, i. e. *ſcire licet* ; *videlicet*, i. e. *videre licet* ; *ilicet*, i. e. *ire licet*; *illico*, i. e. *in loco* ; *magnopere*, i. e. *magno opere* ; *nimirum*, i. e. *ni (eſt) mirum* ; *hodie*, i e. *hoc die* ; *poſtridie*, i. e. *poſtero die* ; *pridie*, i. e. *præ die*. *Profecto, certe, ſane, male, bene, plane*, are obviouſly adjectives. *Forte* is the ablative of *fors* ; and if we had leiſure to purſue the ſubject, and were maſters of all the languages from which the Latin is derived, we doubt not but we ſhould be able to reſolve every *adverb* into a *ſubſtantive* or *adjectives*.

112 By various relations.

ſyſtem. When we take a view of the things by which we are ſurrounded, and which are the archetypes of our ideas, their inherent qualities are not more remarkable than the various relations by which they are connected. *Cauſe* and *effect*, *contiguity* in time or in place, *high* and *low*, *prior* and *poſterior*, *reſemblance* and *contraſt*, with a thouſand other relations, connect things together without end. There is not a ſingle thing which appears ſolitary and altogether devoid of connection. The only difference is, that ſome are intimately and ſome ſlightly connected, ſome nearly and ſome at a diſtance. That the relations by which external objects are thus linked together muſt have great influence in directing the train of human thought, ſo that not one perception or idea can appear to the mind wholly unconnected with all other perceptions or ideas, will be admitted by every man who believes that his ſenſes and intellect repreſent things as they are.

This being the caſe, it is neceſſary, if the purpoſe of language be to communicate thought, that the ſpeaker be furniſhed with words, not only to expreſs the ideas of ſubſtances and attributes which he may have in his mind, but alſo to indicate the order in which he views them, and to point out the various relations by which they are connected. In many inſtances all this may be done by the parts of ſpeech which we have already conſidered. The cloſeſt connection which we can conceive is that which ſubſiſts between a ſubſtance and its qualities; and in every language with which we are acquainted, that connection is indicated by the immediate coaleſcence of the *adjective* with the *ſubſtantive*; as we ſay, *a good man*, *a learned man*; *vir bonus*, *vir doctus*. Again, there is a connection equally intimate, though not ſo permanent, between an *agent* and his *action*; for the action is really an attribute of the agent; and therefore we ſay, the *boy reads*, the *man writes*; the noun coaleſcing with the verb ſo naturally, that no other word is requiſite to unite them. Moreover, an *action* and *that* which is *acted upon* being contiguous in nature, and mutually affecting each other, the words which denote them ſhould in language be mutually attractive, and capable of coaleſcing without external aid; as, he *reads a book*, he *builds a houſe*, he *breaks a ſtone*. Further: becauſe an *attribute* and its *modifications* are inſeparably united, an *adjective* or a *verb* is naturally connected with the *adverb* which illuſtrates or *modifies* its ſignification; and therefore, when we ſay, he *walks ſlowly*, he is *prudently brave*, it is plain that no other word is neceſſary to promote the coaleſcence of the attributes *walking* and *bravery* with their modifications of *ſlowneſs* and *prudence*. The agreement between the terms of any propoſition which conſtitutes truth is abſolutely perfect; but as *either* of the terms may agree with *many other* things beſides its *correlate*, ſome word is requiſite in every propoſition to connect the particular *predicate* with the particular *ſubject*; and that is the office of the ſimple verb TO BE; as *the three angles of every rectilineal triangle* ARE *equal to two right angles*.

113 Expreſſed by prepoſitions and conjunctions.

Thus we ſee, that many of the relations ſubſiſting between our ideas may be clearly expreſſed by means of *nouns, adjectives, verbs, and adverbs*; and in thoſe languages of which the nouns have *caſes*, there is perhaps *no* relation of much importance which *might not* be thus pointed out, without being under the neceſſity of employing the aid of any additional part of ſpeech. In Engliſh, however, the caſe is otherwiſe; for were we to ſay, "He rode Edinburgh, went the parliament-houſe, walked his council the court met," we ſhould ſpeak unintelligibly; as in theſe expreſſions there is either a total want of connection, or ſuch a connection as produces falſehood and nonſenſe. In order to give meaning to the paſſage, the ſeveral gaps muſt be filled up by words ſignificant of the various relations by which the different ideas are connected in the mind; as, "he rode *to* Edinburgh, went *to* the parliament-houſe, *and* walked *with* his counſel *till* the court met." Of theſe *connecting* words, TO and WITH are called *prepoſitions*, AND and TILL are uſually called *conjunctions*. Although theſe *prepoſitions* and *conjunctions* are not ſo *abſolutely neceſſary* in Greek and Latin as they are in Engliſh; yet as there is no language wholly without them, nor any language in which it is not of importance to underſtand their force, they well deſerve a place in univerſal grammar.

114 Theſe connect either ſentences or words.

100. The ſole uſe of *conjunctions* and *prepoſitions* in language is to connect either *ſentences* or *other words*; but the theory of theſe *connectives* themſelves has certainly never been underſtood, unleſs HORNE TOOKE have at laſt hit upon the truth. Mr HARRIS writes *about them* and *about them*, quoting paſſages from Greek and Latin authors, and produces at laſt no information. His *definitions* of both, as *parts of ſpeech void of ſignification*, are highly abſurd; and even the principal *diſtinction* which he makes between them ſeems not to be well founded. *Prepoſitions* and *conjunctions* denote the *relations* ſubſiſting between the ideas expreſſed by thoſe words or ſentences which they ſerve to connect; and as *relations* are contemplated by the mind as well as *poſitive ideas* themſelves, the *words* which *denote* thoſe relations cannot be *inſignificant*. The eſſential difference between the *conjunction* and *prepoſition*, according to the ſame author, conſiſts in this, that the *former* connects *ſentences*, and the *latter words*: but the fact is often otherwiſe. An obvious example occurs where the conjunction AND connects *not ſentences* but *words*. "A man of *WISDOM and VIRTUE* is a perfect character." Here it is not meant to be aſſerted, "that the man of WISDOM is a perfect character, *and* that the man of VIRTUE is a perfect character:" both theſe aſſertions would be falſe. This ſentence therefore (and many ſuch will occur) is not reſolvable into two: whence it follows, that the conjunction AND does not always connect *ſentences*; and the ſame is frequently the caſe with other *conjunctions*.

Horne Tooke's idea of *prepoſitions* and *conjunctions* is, that they do not form *diſtinct claſſes* of words, but are merely *abbreviations* of *nouns* and *verbs*: and with reſpect to the *Engliſh* language, he has been remarkably ſuceeſsful in proving his poſition. But though ſuch be undeniably the caſe in Engliſh, it would be raſh to conclude *à priori* that it is ſo in all other tongues. To eſtabliſh this general concluſion would require a long and tedious deduction in each particular language: and how much learning, leiſure, induſtry, and acuteneſs, ſuch an undertaking would require, even in one tongue, it is not eaſy to determine. In the languages with which we are beſt acquainted, many *conjunctions*, and moſt *prepoſitions* have the *appearance* at leaſt of *original words*: and though this moſt acute grammarian, from his knowledge of the northern tongues, has been able to trace the moſt important of thoſe in Engliſh to very plauſible ſources, the ſame thing would be difficult in other languages of which the ſources are obſcure, and abſolutely impoſſible in thoſe of which they are wholly unknown. It is, however, a ſtrong preſumption in favour of his opinion, that grammarians have never been able to aſſign any *general characteriſtic* of thoſe ſpecies of words; which, did they conſtitute *diſtinct parts* of *ſpeech*, one would think could not have ſo long remained undiſcovered. It is a farther preſumption in his favour, that many words in Greek and Latin, as well as in Engliſh, which have been called *conjunctions*, are obviouſly reſolvable upon his principles, and indeed diſcover their meaning and origin upon mere inſpection. We ſhall therefore content ourſelves with retailing the common doctrine reſpecting theſe parts of ſpeech ſo far as it is intelligible; ſubjoining at the bottom of the page the analyſis given by Horne Tooke of the moſt important *Engliſh conjunctions* and *prepoſitions*; and requeſting our readers, who would underſtand the ſubject, to attend more to the relations between their various ideas, than to the frivolous diſtinctions which, in compliance with cuſtom, we are compelled to lay before them. We ſhall treat firſt of the *conjunction*.

Sect. I. *Of* Conjunctions.

115 Definition of conjunctions. 101. A *conjunction* is *a part of ſpeech, of which*, as its name indicates, *the uſe is to connect either two or more words in a ſentence, or to make of two ſimple ſentences one compound ſentence*. It is uſually ſaid, that conjunctions never connect woods, but ſentences only; and that this is the circumſtance which diſtinguiſhes them from *prepoſitions*. We have already given one example which proves this diſtinction to be ill founded; we ſhall now give from *Horne Tooke* one or two more, which will place its abſurdity in a ſtill clearer light: *Two* AND *two are four; John* AND *Jane are a handſome couple;* AB *and* BC *and* CA *form a triangle*. Are *two four?* Is *John* a *couple* and *Jane* a *couple?* Does *one ſtraight line* form a *triangle?* From the ſubjoined note it appears, that AND (G) *may* connect any two things which can be connected, as it ſignifies *addition*.

116 Which are either conjunctive or disjunctive. *Conjunctions* connecting *ſentences*, ſometimes *connect their meaning*, and *ſometimes not*. For example, let us take theſe two ſentences, *Rome was enſlaved, Cæſar was ambitious*, and connect them together by the conjunction BECAUSE; *Rome was enſlaved* BECAUSE *Cæſar was ambitious*. Here the *meanings*, as well as the *ſentences*, appear to be connected by that natural *relation* which ſubſiſts between an *effect* and its *cauſe*; for the enſlaving of Rome was the *effect* of Cæſar's ambition. That *particular relation* therefore is that which is denoted by the conjunction BECAUSE (H), which would be improperly uſed to connect two ſentences between which the *relation* of an *effect* to its *cauſe* exiſts not. But if it be ſaid, *manners muſt be reformed*, OR *liberty will be loſt;* here the conjunction OR, though it *join* the *ſentences*, yet as to their meaning is a perfect *disjunctive*. Between the *reformation* of *manners* and the *loſs of liberty* there is certainly a *natural relation*; but it is not the relation of *contiguity* or *ſimilitude*, or of *cauſe* and *effect*, but of *contrariety*. The *relation* of *contrariety* therefore is the ſignification of the word OR (I). And thus it appears, that though all conjunctions may combine *ſentences*, yet, with reſpect to the *ſenſe*, ſome are CONJUNCTIVE and others are DISJUNCTIVE.

117 Conjunctions either copulative or continuative. 102. Thoſe *conjunctions which conjoin both ſentences and their meanings* are either COPULATIVES or CONTINUATIVES. The principal copulative in *Engliſh* is AND, which we have already conſidered. The continuatives are much more numerous; IF, AN, BECAUSE, THEREFORE, WHEREFORE, HENCE, &c. The difference between them is this: The *copulative* does no more than barely *couple* words or ſentences, and is therefore applicable to all ſubjects of which the natures are *not incompatible* (K). The relation which it denotes is that of *juxtapoſition* or of *one thing added to another*. *Continuatives*, on the contrary, by a more intimate connection, conſolidate ſentences *into one continuous whole;* and are therefore applicable only to ſubjects which have an *eſſential relation to* each other, ſuch as *that* of an *effect to its cauſe*, or of *a cauſe to its effect*. For example, it is no way improper to ſay, *Lyſippus was a ſtatuary*, AND *Priſcian a grammarian; the ſun ſhineth*, AND *the ſky is clear;* becauſe theſe are things that may coexiſt, and yet imply no abſurdity. But it would be abſurd to ſay, *Lyſippus was a ſtatuary* BECAUSE *Priſcian was a a grammarian*; though not to ſay, *the ſun ſhineth* BECAUSE *the ſky is clear*. With reſpect to the firſt, the reaſon is, that the word BECAUSE denotes the *relation* which an *effect* bears to its *cauſe:* but the ſkill of *Priſcian* in *grammar* could not poſſibly be the *cauſe* of *Lyſippus*'s ſkill in *ſtatuary*; the coincidence between the ſkill of the one and that of the other, in arts ſo very different, was merely *accidental*. With reſpect to *the ſhining of the ſun* and the *clearneſs of the ſky*, the caſe is widely different; for the *clearneſs of the ſky* is the CAUSE of the *ſun's ſhining*, at leaſt ſo as to be ſeen by us.

118 Continuatives, either ſuppoſitive or poſitive. As to the *continuatives*, they are either SUPPOSITIVE, ſuch as *if*, *an;* or POSITIVE, ſuch as *becauſe*, *therefore*, *as*, &c. Take examples of each: *You will live happily* IF *you live honeſtly; you live happily* BECAUSE *you live honeſtly; you live honeſtly*, THEREFORE *you live happily*. The difference between theſe *continuatives* is this: The *ſuppoſitives* denote *connection*, but do not aſſert *actual* exiſtence;

(G) AND is a Saxon word, being (according to Mr *H. Tooke*) an abbreviation of ANAD, the imperative of the verb ANANAD, *to add to*, or *heap up*. So that when we ſay *two* AND *two are four*, we only declare that *two* ADDED TO *two are four*.

(H) BECAUSE is compounded of the Saxon BE—*by*, and *cauſe*; and by ſome of our moſt ancient authors it was written BY CAUSE. *Rome was enſlaved*, BECAUSE *Cæſar was ambitious*, is therefore equivalent to, *Rome was enſlaved by the cauſe* CÆSAR WAS AMBITIOUS; taking the phraſe, *Cæſar was ambitious* as an abſtract noun in concord with the other noun *cauſe*.

(I) OR ſeems to be a mere contraction of the Saxon ODER, which ſignifies *other*, i. e. ſomething *different* and often *contrary*. So that the conjunction *or* muſt always denote *diverſity*, and very often *contrariety*.

(K) As *day* and *night*, *heat* and *cold:* for we cannot ſay of the ſame portion of time, *it is day* AND *it is night;* or of the ſame body, it is both *hot* AND *cold*.

iſtence; the *poſitives* imply both the *one* and the *other* (L).

118 Poſitives, either cauſal or collective.

The *poſitives* abovementioned are either CAUSAL; ſuch as, *becauſe, ſince, as* (M), &c.: Or COLLECTIVE; ſuch as, *therefore, wherefore*, &c. The difference between theſe is this: The *cauſals* ſubjoin *cauſes* to *effects*; as, *the ſun is in eclipſe*, BECAUSE *the moon intervenes*: The *collectives* ſubjoin *effects* to *cauſes*; as, *the moon intervenes*, THERE-

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(L) The reaſon of all this will be apparent from the analyſis given by *Horne Tooke* of thoſe words which we have called *ſuppoſitive* conjunctions. IF and AN may be uſed mutually and indifferently to ſupply each other's place; for they are both *verbs*, and of the ſame import. IF is merely the imperative of the *Gothic* and *Anglo-Saxon* verb GIFAN, *to give*; and in thoſe languages, as well as in the Engliſh formerly, this *ſuppoſed conjunction* was pronounced and written as the common imperative GIF. Thus,

——————"My largeſſe
"Hath lotted her to be your brother's miſtreſſe,
"GIF ſhee can be reclaimed; GIF not, his prey." *Sad Shepherd*, Act II. Scene 1ſt.

Gawin Douglaſs almoſt always uſes GIF for IF, as the common people in ſome counties of Scotland do even at this day; and it is obvious, that our IF has always the *ſignification* of the Engliſh imperative *give*, and no other. So that the reſolution of the conſtruction in the ſentence, *IF you live honeſtly you will live happily*, is ſimply this, *GIVE you live honeſtly* (taking *you live honeſtly* as an abſtract noun) *you will live happily*. Your living *happily* is declared to depend upon your living *honeſtly* as the *condition*; but *give that*, and your happineſs is poſitively aſſerted. In like manner may ſuch ſentences be reſolved as,

"I wonder he can move! that he's not fixed!
"IF THAT his feelings be the ſame with mine."

Thus, "His feelings be the ſame with mine, *give that*, I wonder he can move," &c. And here we cannot forbear giving our aſſent to the truth of Mr Tooke's obſervation, that when the *datum* upon which any concluſion depends is a *ſentence*, the article THAT, if not expreſſed, *may* always be inſerted. We do not, however, think the *inſertion* at all times abſolutely *neceſſary* to complete the ſyntax; for active verbs govern *whole ſentences* and *clauſes* of ſentences as well as ſubſtantive *nouns*. Inſtances of this occur ſo frequently in the Latin claſſics, that they can have eſcaped no man's notice, who has ever read *Horace* or *Virgil* with attention. We agree likewiſe with our moſt ingenious author, that where the *datum* is not a ſentence, but ſome *noun* governed by the verb IF or GIVE, the article THAT can never be inſerted. For example, if we be aſked, how the weather will diſpoſe of us to-morrow? we cannot ſay: "IF THAT fair, it will ſend us abroad; IF THAT foul, it will keep us at home;" but "IF fair, it will ſend us abroad," &c. The reaſon is obvious: the verb in this caſe directly governs the noun; and the reſolved conſtruction is, "GIVE fair weather, it will ſend us abroad; GIVE foul weather, it will keep us at home."

AN, the other ſuppoſitive conjunction mentioned, is nothing elſe than the *imperative* of the Anglo-Saxon verb ANAN, which likewiſe means to *give* or to GRANT. As, "AN you had an eye behind you, you might ſee more detraction at your heels than fortunes before you;" that is, "GRANT you had an eye behind you, you might ſee," &c. This account of the two *conditional conjunctions* in Engliſh is ſo rational and ſatisfactory, that we are ſtrongly inclined to believe that all thoſe words which are ſo called, are in all languages to be accounted for in the ſame manner. Not indeed that they muſt all mean preciſely to *give* or *grant*, but ſome word equivalent; ſuch as, *be it, ſuppoſe, allow, permit*, &c.; which meaning is to be ſought for in the particular etymology of each reſpective language.

(M) Of the *cauſal conjunctions* mentioned in the text, BECAUSE has been already conſidered; and ſome account muſt now be given of the two words SINCE and AS. The former of theſe, according to Mr H. Tooke, is a very corrupt abbreviation, confounding together different words and different combinations of words. To us it appears to be compounded of SEAND, *ſeeing*; and ES, *that* or *it*; or of SIN, *ſeen*, and ES. SEAND and SIN are the *preſent* and *paſt* participles of the Anglo Saxon verb SEON, *to ſee*. In modern Engliſh SINCE is uſed four ways; *two* as a PREPOSITION affecting *words*, and *two* as a CONJUNCTION affecting *ſentences*. When uſed as a prepoſition, it has always the ſignification of the paſt participle SEEN joined to THENCE (i. e. *ſeen and thenceforward*), or elſe the ſignification of the paſt participle *SEEN only*. When uſed as a *conjunction*, it has ſometimes the ſignification of the *preſent* participle SEEING, or SEEING THAT; and ſometimes the ſignification of the paſt participle SEEN, or SEEN THAT. We ſhall give examples of all theſe ſignifications. 1ſt, As a *prepoſition* ſignifying *SEEN and thenceforward*: "A more amiable ſovereign than George III. has not ſwayed the Engliſh ſceptre *SINCE the conqueſt*." That is, "*The conqueſt ſeen* (or at the completion of the ſight of the conqueſt), and thenceforward, a more amiable ſovereign than George III. has not ſwayed the Engliſh ſceptre." SINCE, taken in this ſenſe, ſeems rather to be a corruption of SITHTHAN or SITHENCE, than a compound of SEAND and ES. 2dly, As a prepoſition ſignifying SEEN ſimply: "Did George III. reign *before* or SINCE that example?" 3dly, As a conjunction, SINCE means *ſeeing that*: as, "If I ſhould labour for any other ſatisfaction but that of my own mind, it would be an effect of phrenzy in me, not of hope; SINCE (or *ſeeing that*) it is not truth but opinion that can travel through the world without a paſſport. 4thly, It means SEEN THAT, or THAT SEEN; as, "SINCE death in the end takes from all whatſoever fortune or force takes from any one, it were a fooliſh madneſs in the ſhipwreck of worldly things, when all ſinks but the ſorrow, to ſave that:" i. e.—"Death in the end takes from all whatſoever fortune or force takes from any one; THAT SEEN, it were a fooliſh madneſs," &c.

As, the other *cauſal* conjunction mentioned in the text, is an *article* meaning always IT, or THAT, or WHICH. Take the following example:

"She glides away under the foamy ſeas
"As ſwift as darts or feather'd arrows fly."

THEREFORE (N) *the ſun is in eclipſe.* We therefore uſe *cauſals* in thoſe inſtances where, the *effect* being conſpicuous, we ſeek for its *cauſe;* and *collectives,* in demonſtration and ſcience, properly ſo called, where the *cauſe* being firſt known, by its help we diſcern *effects.*

119 Cauſal conjunctions denote four kinds of cauſes.

As to *cauſal* conjunctions, we may further obſerve, that there is no one of the four ſpecies of cauſes which they are not capable of denoting. For example, the MATERIAL *cauſe; The trumpet ſounds* BECAUSE *it is made of metal.* The FORMAL; *The trumpet ſounds* BECAUSE *it is long and hollow.* The EFFICIENT; *The trumpet ſounds* BECAUSE *an artiſt blows it.* The FINAL; *The trumpet ſounds* THAT *it may raiſe our courage.* It is worth obſerving, that the three firſt cauſes are expreſſed by the ſtrongeſt affirmation; becauſe if the *effect* actually be, theſe muſt be alſo. But this is not the caſe with reſpect to the laſt, which is only affirmed as a thing that *may* happen. The reaſon is obvious: for whatever may be the *end* which ſet the artiſt firſt to work, *that end* it may ſtill be beyond his power to obtain; as, like all other contingents, it may either happen or not. Hence alſo it is connected by a particular conjunction, THAT (O), abſolutely confined to this *cauſe.*

120 Disjunctive conjunctions,

103. We come now to the DISJUNCTIVE CONJUNCTIONS: a ſpecies of words which bear this contradictory name, becauſe while they CONJOIN *the ſentences,* they DISJOIN the ſenſe; or, to ſpeak a language more intelligible, they denote *relations* of DIVERSITY or OPPOSITION.

That there ſhould be ſuch words, whether called *conjunctions* or not, is extremely natural. For as there is a principle of UNION diffuſed through all things, by which THIS WHOLE is kept together and preſerved from diſſipation; ſo is there in like manner a principle of DIVERSITY diffuſed through all, the ſource of *diſtinction,* of *number,* and of *order.* Now it is to expreſs in ſome degree the *modifications of this diverſity,* that thoſe words called DISJUNCTIVE CONJUNCTIONS are employed.

121 Either ſimple or adverſative.

Of theſe *disjunctives,* ſome are SIMPLE and ſome ADVERSATIVE: *Simple;* as when we ſay, EITHER *it is day* OR *it is night: Adverſative;* as when we ſay, *it is not day* BUT *it is night.* The difference between theſe is, that the *ſimple* expreſs nothing more than a *relation* of DIVERSITY; the *adverſative* expreſs *a relation* not barely of *diverſity,* but alſo of OPPOSITION. Add to this that the *adverſatives* are DEFINITE, *the ſimple* INDEFINITE. Thus when we ſay, *the number three is not an even number,* BUT (P) *an odd;* we not only *disjoin* two oppoſite attributes, but we *definitely* affirm the *one* to *belong* to

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That is, "She glides away (with) THAT ſwiftneſs (with) WHICH darts or feathered arrows fly." In German, where AS ſtill retains its original ſignification and uſe, it is written ES. So is another *conjunction* of the ſame import with AS, being evidently the Gothic article SA or SO, which ſignifies *it* or *that.*

(N) As Mr Harris has called THEREFORE, WHEREFORE, &c. *collective conjunctions,* we have retained the denomination, though perhaps a more proper might be found. It is indeed of little conſequence by what name any claſs of words be called, provided the import of the words themſelves be underſtood. WHEREFORE and THEREFORE evidently denote the *relation* of a *cauſe* to its *effects.* They are compounds of the Saxon words HWÆR and THÆR with FOR or VOOR; and ſignify, *for which, for thoſe* or *that.* It is worthy of remark, that in ſome parts of Scotland the common people even at this day uſe THIR for *theſe.*

(O) We have already conſidered the word THAT, and ſeen that it is never a conjunction, but uniformly a definite article. "The trumpet ſounds (for) THAT it may raiſe our courage;" taking the clauſe *it may raiſe our courage* as an abſtract noun in concord with *that* and governed by *for.* Or the ſentence may be reſolved thus: "The trumpet may raiſe our courage (for) that (purpoſe) it ſounds."

(P) Mr Horne Tooke has favoured us with ſome ingenious remarks on the two different derivations of the word BUT, when uſed in the two acceptations that are uſually annexed to it, viz. that which it bears in the *beginning* of a ſentence, and that which it has in the *middle.* He has given it as his opinion, that this word, when employed in the *former way,* is corruptly put for BOT, the imperative of the Saxon verb BOTAN, *to boot,* to *ſuperadd,* to *ſupply,* &c. and that when uſed in the *latter,* it is a contraction of BE-UTAN, the imperative of BEON-UTAN, *to be out.* Our ancient writers made the proper diſtinction between the orthography of the one word and that of the other. Gawin Douglaſs in particular, although he frequently confounds the two words, and uſes them improperly, does yet abound with many inſtances of their proper uſe; and ſo contraſted, as to awaken, ſays our author, the moſt inattentive reader. Of the many examples quoted by him, we ſhall content ourſelves with the two following:

"BOT thy worke ſhall endure in laude and glorie,
"BUT ſpot or fault condigne eterne memorie." *Preface.*
——"BOT gif the fates, BUT pleid,
"At my pleaſure ſuffer it me life to leid." *Book* 4.

If this derivation of the word BUT from BOTAN, to *ſuperadd,* be juſt, the ſentence in the text, "the number three is not an even number BUT an odd," will be equivalent to, "the number three is not an even number, ſuperadd (it is) an odd number;" and if ſo, the oppoſition is not marked (at leaſt directly) by the word BUT, but by the adjectives EVEN and ODD, which denote attributes in their own nature oppoſite. It is only when BUT has this ſenſe that it anſwers to *ſed* in Latin, or to *mais* in French. In the ſecond line of the quotation from Gawin Douglaſs's Preface, the word BUT is evidently a contraction of BE-UTAN, and has a ſenſe very different from that of BOT in the preceding line. The meaning of the couplet is, "SUPERADD (to ſomething ſaid or ſuppoſed to be ſaid before) thy work ſhall endure in laude and glorie, BE OUT (i. e. *without*) ſpot or fault, &c. In the following paſſage from DONNE, the word BUT, although written in the ſame manner, is uſed in both its meanings: "You muſt anſwer, that ſhe was brought very near the fire, and as good as thrown in or elſe, that ſhe was provoked to it by a divine inſpiration. BUT that another divine inſpiration moved the beholders to believe that ſhe did therein a noble act, this act of her's might have been calumniated." That the *ſubject*, and *deny* the *other*. But when we ſay, *the number of the ſtars is* EITHER (Q) *even* OR *odd*; though we aſſert *one* attribute *to be*, and the other *not to be*, yet the alternative is notwithſtanding left *indefinite*.

122 An improper diſtinction.

As to *adverſative conjunctions*, it has been already ſaid, after Mr Harris, that they imply OPPOSITION: but the truth ſeems to be, that they only *unite* in the ſame ſentence *words* or *phraſes* of oppposite meanings. Now it is obvious, that *oppoſite attributes* cannot belong to the *ſame ſubject*: as when we ſay, *Nereus was beautiful*, we cannot SUPERADD to this ſentence, that *he was ugly*; we cannot ſay, *he was beautiful* BUT *ugly*. When there is oppoſition, it muſt be either of the *ſame* attribute in *different* ſubjects; as when we ſay, "*Brutus* was a patriot, BUT *Cæſar* was not:" Or of *different* attributes in the *ſame* ſubject; as when we ſay *Gorgius* was a *ſophiſt*, BUT not a *philoſopher*:" Or of *different attributes* in *different ſubjects*; as when we ſay, "*Plato* was a *philoſopher*, BUT *Hippias* was a *ſophiſt*." The conjunctions uſed for all theſe purpoſes have been called *abſolute* adverſatives, we think improperly, as the *oppoſition* is not marked by the *conjunctions*, but by the *words* or *ſentences* which they ſerve to *connect*. Mr *Locke*, ſpeaking of the word BUT, ſays, that "it ſometimes intimates a *ſtop* of the mind, in the courſe it was going, before it came to the end of it:" to which Mr *Tooke* replies with truth, that BUT itſelf is the fartheſt of any word in the language from *intimating a ſtop*. On the contrary, it always intimates ſomething to *follow*; inſomuch, that when any man in diſcourſe finiſhes his words with BUT, inſtead of ſuppoſing him to have *ſtopped*, we always aſk, BUT *what?*

Beſides the adverſatives already mentioned, there are two other ſpecies, of which the moſt important are UNLESS and ALTHOUGH. For example, "*Troy* will be taken, UNLESS the *palladium* be preſerved; *Troy* will be taken, ALTHOUGH Hector defend it." The nature of theſe adverſatives may be thus explained. As every *event* is naturally allied to its cauſe, ſo by parity of reaſon it is oppoſed to its *preventive*; and as every cauſe is either *adequate* or *inadequate* (inadequate when it endeavours without being effectual) ſo in like manner is every *preventive*. Now *adequate* preventives are expreſſed by ſuch adverſatives as UNLESS: "*Troy* will be taken, UNLESS the *palladium* be preſerved;" that is, *this* alone is ſufficient to *prevent* it. The *inadequate* are expreſſed by ſuch adverſatives as ALTHOUGH: "*Troy* will be taken ALTHOUGH *Hector* defend it;" that is, *Hector*'s defence will prove *ineffectual*. Theſe may be called adverſatives ADEQUATE and INADEQUATE.

Such is the doctrine of Mr *Harris*; which, although we can diſcover in it no determinate meaning, we have ventured with others to retail, in reſpect to our readers, who may be more perſpicacious than ourſelves. The author was a man of great learning; and the ſubject, as he has treated it, appears to be intricate. But whatever ſenſe or nonſenſe there may be in what he ſays of *cauſes* and *preventives*, *adequate* and *inadequate*, we have no heſitation to affirm that he has totally miſtaken the import of the words UNLESS and ALTHOUGH. From theſe being called both *preventives*, the *one adequate* and the *other inadequate*, an unwary reader might be led to infer, that they denote the *ſame idea* or the *ſame relation*; and that the whole difference between them is, that the expreſſion of the one is more forcible than that of the other. Nothing, however, can be further than this from the truth. The meaning of UNLESS is directly oppoſite to that of ALTHOUGH. UNLESS (R) and THOUGH

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is, "You muſt anſwer, that ſhe was brought very neare the fire, &c. "Superadd (to that anſwer) BE OUT (or UNLESS or WITHOUT; for, as will be ſeen by and by, all thoſe words are of the ſame import) that another divine inſpiration moved," &c. To theſe remarks and examples it may be worth while to add, that even now BUT is often uſed by the illiterate Scotch for WITHOUT; as nothing is more common than to hear a clown ſay "He came from home BUT his breakfaſt."

Having mentioned WITHOUT as a word of the ſame import with BUT when diſtinguiſhed from BOT, it may not be improper to conſider that word here; for though in modern Engliſh it is entirely confined to the office of a prepoſition, it was formerly uſed indifferently either as a *prepoſition* or a *conjunction*. WITHOUT then is nothing but the imperative WYRTHAN-UTAN, from the Anglo-Saxon and Gothic verb WEORTHAN WITHAN; which in the Anglo-Saxon language is incorporated with the verb *BEON*, *eſſe*. According to this derivation, which is *Horne Tooke*'s, the word WITHOUT, whether called conjunction or prepoſition, is the ſame as BE OUT; and ſuch will be its import, ſhould it after all be nothing more than a compound of WYTH, which ſignifies to *join* and ſometimes to *be*, and UTE, *out*.

(Q) EITHER is nothing more than the diſtributive *pronoun*, which every body underſtands; and OR we have already explained.

(R) So low down as in the reign of queen Elizabeth (ſays *Horne Tooke*) this conjunction was ſometimes written *oneles* or *oneleſſe*; but more anciently it was written ONLES and ſometimes ONLESSE. Thus, in the trial of Sir John Oldcaſtle in 1413, "It was not poſſible for them to make whole Chriſtes cote without ſeme, ONLESSE certeyn great men were brought out of the way." So, in "The image of governance," by Sir T. Elliot, 1541, "Men do fere to approache unto their ſoveregne Lord, ONELES they be called. So again, in "A neceſſary doctrine and erudition for any Chriſtian man, ſet furthe by the kinge's majeſtie of England," 1543, "ONLES ye believe, ye ſhall not underſtande." "No man ſhall be crowned, ONLES he lawfully fight." "The ſoul waxeth feeble, ONLESSE the ſame be cheriſhed." "It cannot be begynne, ONELESSE by the grace of God." Now, ONLES is the imperative of the Anglo-Saxon verb ONLESAN, to *diſmiſs*, or *remove*.

LES, the imperative of LESAN (which has the ſame meaning as ONLESAN), is likewiſe uſed ſometimes by old writers inſtead of UNLESS. Inſtances might be given in abundance from *G. Douglas* and *Ben. Johnſon*; but perhaps it may be of more importance to remark, that it is this ſame imperative LES, which, placed at the end of nouns and coaleſcing with them, has given to our language ſuch adjectives as *hopeleſs*, *reſtleſs*, *deathleſs*, *motionleſs*, &c. i. e. *diſmiſs* hope, reſt, death, motion, &c.

Mr Tooke obſerves, that all the languages which have a conjunction correſponding to LES or UNLESS, as well are both *verbs* in the *imperative mode*; the former ſignifying *take away* or *diſmiſs*; the latter, *allow, permit, grant, yield, aſſent*. This being the caſe, "*Troy* will be taken UNLESS the *palladium* be preſerved," is a ſentence equivalent to "REMOVE *the palladium be preſerved* (taking *the palladium be preſerved* as an abſtract noun, *the preſervation of the palladium*) Troy will be taken." Again, "*Troy* will be taken, ALTHOUGH *Hector* defend it," is the ſame as "*Troy* will be taken ALLOW *Hector* (to) defend it." The idea, therefore, expreſſed by UNLESS is that of *the* REMOVAL *of one thing to make way for another*; the idea expreſſed by ALTHOUGH (S) is *that of* ALLOWING *one thing to* CO-EXIST *with another, with which it is* APPARENTLY *incompatible*.

104. Before we take leave of this ſubject, we might treat, as others have treated, of *adverbial* conjunctions, and conjunctions (T) of various other denominations. But of multiplying ſubdiviſions there is no end; and ſyſtems, in which they abound, convey for the moſt part no information. The nature of conjunctions can be thoroughly underſtood only by tracing each to its original in ſome parent or cognate tongue; and when that ſhall be done in other languages with as much ſucceſs as it has lately been done by Mr *Horne Tooke* in Engliſh, then, and not till then, may we hope to ſee a rational, comprehenſive, and conſiſtent theory of this part of ſpeech. Then too ſhall we get rid of all that farrago of uſeleſs diſtinctions into *conjunctive, adjunctive, disjunctive, ſubdisjunctive, copulative, continuative, ſubcontinuative, poſitive, ſubpoſitive, cauſal, collective, preventive adequate* and *inadequate, adverſative, conditional, illative*, &c. &c.; which explain nothing, and which ſerve only to veil ignorance and perplex ſagacity.

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Which ſerves only to veil ignorance.

That Mr *Tooke*'s principles will apply exactly to the conjunctions of *every language* both dead and living, is what our limited knowledge of theſe languages does not authoriſe us poſitively to affirm. It is however a ſtrong preſumption in favour of his opinion, that illiterate ſavages, the firſt cultivators of language, are little likely to have ſent out their faculties in queſt of words to denote the *abſtract relations* ſubſiſting among their ideas, when we have ſuch evidence as his book affords, that the names of the moſt *common ſubſtances* and *qualities* could anſwer *that* and every *other* purpoſe, which in the

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well as the manner in which the place of theſe words is ſupplied in the languages which have not a conjunction correſpondent to them, ſtrongly juſtify his derivation which we have adopted. The Greek ειμη, the Latin *niſi*, the Italian *ſe non*, the Spaniſh *ſino*, the French *ſi non*, all mean *be it not*. And in the ſame manner do we ſometimes ſupply its place in Engliſh by *but, without, be it not, but if*, &c. It may be proper juſt to add, that, according to the ſame author, the conjunction LEST is a contraction of LESED, the paſt participle of LESEN; and that LEST, with the article *that*, either expreſſed or underſtood, means no more than *hoc dimiſſo* or *quo dimiſſo*.

(S) ALTHOUGH is compounded of *al* or *all*, and THO' THOUGH, THAH, or, as the vulgar more purely pronounce it, THAF, THAUF, and THOF. Now THAF or THAUF is evidently the imperative THAF or THAFIG of the verb THAFIAN or THAFIGAN, to *allow, permit, grant, yield, aſſent*; and THAFIG becomes *thah, though, thoug* (and *thoch*, as G. Douglas and other Scotch authors write it) by a tranſition of the ſame ſort, and at leaſt as eaſy as that by which HAFUC becomes *hawk*. It is no ſmall confirmation of this etymology, that anciently they often uſed *all be, albeit, all had, all were, all give*, inſtead of ALTHOUGH; and that as the Latin SI *(if)* means *be it*, and NISI and SINE *(unleſs* and *without)* mean *be not*, ſo ETSI *(although)* means *and be it*.

(T) In a work of this kind, which profeſſes to treat of *univerſal* grammar, it would be impertinent to waſte our own and our readers time on a minute analyſis of each conjunction which may occur in any one particular language. We ſhall therefore purſue the ſubject no farther; but ſhall ſubjoin MR HORNE TOOKE's table of the Engliſh conjunctions, referring thoſe who are deſirous of fuller ſatisfaction to his ingenious work intitled *The Diverſions of Purley*.

	Are the Imperatives	Of their Reſpective Verbs	
IF	GIF	GIFAN	To give.
AN	AN	ANAN	To grant.
UNLESS	ONLES	ONLESAN	To diſmiſs.
EKE	EAC	EACAN	To add.
YET	GET	GETAN	To get.
STILL	STELL	STELLAN	To put.
ELSE	ALES	ALESAN	To diminiſh.
THOUGH	THAFIG	THAFIGAN	
or	or	or	To allow.
THO'	THAF	THAFIAN	
BUT	BOT	BOTAN	To boot, to ſuperadd.
BUT	BE-UTAN	BEON-UTAN	To be out.
WITHOUT	WYRTH-UTAN	WYRTHAN-UTAN	To be out.
AND	AN-AD	ANAN-AD	Dare congeriem.

LEST is the participle LESED of LESAN, to diſmiſs.

SINCE { SITHTHAN, SYNE, SEAND-ES, SITHTHE or SIN-ES } is the participle of SEON, to ſee.

THAT is the article or pronoun THAT.

As is ES, a German article, meaning *it, that*, or *which*. And

So is SA or SO, a Gothic article of the ſame import with AS.

ordinary intercourſe of life can be anſwered by the faculty of ſpeech. It is a farther preſumption in his favour, that in the rudeſt languages there are few if any conjunctions; and that even in others which are the moſt highly poliſhed, ſuch as *Greek* and *Latin as* well as *Engliſh*, many of thoſe words which have been called conjunctions are obviouſly reſolvable into other parts of ſpeech. Thus Αλλα, tranſlated *but*, is evidently the neuter gender of either the *nominative* or *accuſative plural* of αλλος *another*; and when uſed as a *conjunction*, it intimates that you are going to *add ſomething* to what you have already ſaid. *Cæterum* has the ſame meaning, and is nothing but και ετερον. MAIS (*but* in French) is the Latin *majus*; *ut*, *uti*, οτι, *quod*, is the *relative pronoun*. Of *quocirca*, *quia*, *præterea*, *antequam*, *quanquam*, *quamvis*, *quantumvis*, *quamlibet*, &c. the reſolution is too obvious to require being mentioned. Where ſuch reſolutions as theſe can be made, or when the *conjunctions* of any *particular tongue* can be traced to their *origin* in *any other*, there needs be no diſpute about their *true import*: but when the caſe is otherwiſe, and the *conjunction* either appears to be an *original* word, or is derived from a *ſource* to which it cannot be *traced*, we would adviſe ſuch of our readers as wiſh to ſpeak or write correctly, to diſmiſs from their minds all conſideration of *copulatives*, *continuatives*, *cauſals* and *diſjunctives*, with the reſt of that jargon which we have already mentioned; and to inquire diligently in what *manner* and for what *purpoſe* the *conjunction* in *queſtion* is uſed by the *beſt writers*, both *ancient* and *modern*, of the particular language which they are ſtudying. This will indeed be found a work of labour: but it appears to us to be the only means left of diſcovering the preciſe *relations* which ſuch conjunctions were intended to expreſs; and, by conſequence, of knowing what words or ſentences they are fitted to connect, ſo as to produce a ſtyle at once accurate and perſpicuous.

124 The import of conjunctions in any language to be learned from the beſt authors ancient and modern.

SECT. II. *Of* PREPOSITIONS.

125 Prepoſitions unite two words that refuſe to coaleſce of themſelves,

105. By Mr HARRIS and his followers, a PREPOSITION is defined to be *a part of ſpeech devoid itſelf of ſignification, but ſo formed as to unite two words that are ſignificant, and that refuſe to coaleſce or unite of themſelves.* We have already expreſſed our opinion of that theory which holds certain *words* to be *devoid* of *ſignification*; but its abſurdity, in the preſent inſtance, is more than ever glaring. Concerning the number of *prepoſitions*, it is well known that hitherto authors have never agreed. The ancient Greek grammarians admitted only 18; the ancient Latin grammarians above 50; though the moderns *Sanctius*, *Sciopius*, *Perizonius*, *Voſſius*, and *Ruddiman*, have endeavoured to leſſen the number without fixing it. Biſhop *Wilkins* thinks that 36 are ſufficient; and *Girard* ſays, that the French language has done the buſineſs effectually with 32. But if *prepoſitions* be words *devoid* of *ſignification*, why ſhould there be diſputes reſpecting their number? or why in any language ſhould there be more than *one* prepoſition, ſince a *ſingle unmeaning* mark of connection would certainly anſwer the purpoſe as well as a thouſand? The *cypher*, which has no value of itſelf, and only ſerves (if we may uſe the language of grammarians) to *connote* and *conſignify*, and to change the value of *figures*, is not *ſeveral* and *various*, but uniformly *one* and the *ſame*. That "the *prepoſition* is ſo formed, as to unite two words which refuſe to coaleſce or unite of themſelves," is indeed true; and this union it effects, *not* by having *no ſignification* of its own, but by *ſignifying* the *relation* by which the *things* expreſſed by the *united words* are connected in *nature*. *Prepoſitions* are to be accounted for in much the ſame manner as the *caſes* of *nouns*. The neceſſity of *this ſpecies* of words, or of ſome equivalent invention, follows from the impoſſibility of having in language a diſtinct *complex term* for each diſtinct *collection of ideas* which we may have occaſion to put together in diſcourſe. The addition or ſubtraction of *any one idea*, to or from a *collection* of ideas, makes it a *different* collection; and if, after either of theſe operations, it were to be expreſſed by the *ſame word* as *before*, nothing could enſue but miſrepreſentation and falſehood. Now, to uſe in language a *different* and *diſtinct complex term* for *each* different and diſtinct *collection of ideas*, is equally impoſſible, as to uſe a diſtinct *particular term* for each *particular* and *individual idea*. To ſupply, therefore, the place of the complex terms which are wanting in a language, are the *caſes of nouns* and *prepoſitions* employed; by the aid of which, *complex* and *general terms* are prevented from being infinite or too numerous, and are uſed only for thoſe collections of ideas which we have moſt frequent occaſion to mention in diſcourſe. By means of *prepoſitions* this end is obtained in the moſt ſimple manner. For, having occaſion to mention a collection of ideas for which there is no *ſingle complex term* in the language, we either take that complex term which includes the *greateſt number*, though not *all* of the ideas we would communicate; or elſe we take that complex term which includes *all*, and the feweſt ideas *more* than thoſe we ſhould communicate; and then, by the help of the prepoſition, we either make up the *deficiency* in the *one* caſe, or retrench the *ſuperfluity* in the other. For inſtance, having occaſion to mention a houſe of a *particular deſcription*, and knowing that the term *houſe* is too *general* for our purpoſe, and that the building we have in view has no appropriate name, we ſay, perhaps, *a houſe* WITH *a party-wall*, or *a houſe* WITHOUT *a roof*.—In the firſt inſtance, the complex term *houſe* is *deficient*, and the prepoſition directs to *add* what is *wanting*.—In the ſecond inſtance, the complex term is *redundant* as it denotes a *complete houſe*; the prepoſition, therefore, directs to *take away* what is *ſuperfluous*.

126 By ſignifying the relation between them.

Now, conſidering *prepoſitions* in this the moſt ſimple light, as ſerving only to limit or modify general terms, it is abſolutely neceſſary that they ſhould have meanings of their own; for otherwiſe, how could we, in the inſtances before us, make known by them our intention, whether of adding to or retrenching from, the ſame general term *houſe*. If, to a diſciple of Mr HARRIS, we ſhould ſay, *a houſe* JOIN; he would reply, JOIN WHAT? But he would not contend that JOIN is an *indeclinable* word which has *no meaning* of its *own*, becauſe he knows that it is the *imperative* of a *verb*, of which the other parts are ſtill in uſe; and its own meaning is clear, though the ſentence it not completed. If, inſtead of JOIN, we ſhould ſay to him, *a houſe* WITH; he would ſtill aſk the ſame queſtion, WITH *what*? But if we were to diſcourſe with him concerning the word WITH, he would probably tell us, that WITH is a *prepoſition*, an indeclinable word, which is itſelf *devoid of ſignification*, but ſo *formed as to unite two words that are ſignificant*. And yet it would be evident by his queſtion, that he *felt* it had a *meaning* of its *own*; which is in reality the ſame as JOIN (U). Indeed, ſo far has always been plainly perceived, that WITH and WITHOUT are directly oppoſite and contradictory; and it would puzzle the moſt acute philoſopher to diſcover oppoſition and contradiction in two words where neither of them had any ſignification. Wilkins, therefore has well expreſſed their meaning, where he ſays, that WITH is a prepoſition "relating to the notion of *ſocial*, or circumſtance of *ſociety* AFFIRMED; and that WITHOUT is a prepoſition relating to the ſame notion of *ſocial*, or circumſtance of *ſociety* DENIED."

127 They all ſerve to modify in different ways ſome general term or general affirmation.

106. But to denote the relation of *adding* and *taking away*, are not the only purpoſes for which pepoſitions are employed. They all indeed ſerve to modify ſome *general term* or *general affirmation*, but not preciſely in the ſame way as WITH and WITHOUT. It has been already obſerved, that words ſignificant of thoſe things which coincide in nature, coaleſce with one another in ſyntax, without being beholden to any auxiliary tie. For inſtance, an *adjective* coaleſces with its *ſubſtantive*; a *verb* with its *nominative*; a noun expreſſing an *object* acted upon, with a *verb* denoting *action*, and an *adverb* with its *verb*. Take the following example: THE SPLENDID SUN GENIALLY WARMETH THE FERTILE EARTH. But ſuppoſe we were deſirous to modify this affirmation by the addition of other ſubſtantives, AIR, for inſtance, and BEAMS; how would theſe coincide with the other words of the ſentence, or under what character could they be introduced? Not as *nominatives* or *accuſatives* to the *verb*, for both theſe places are already filled; the *nominative* by the ſubſtance, SUN, which is certainly the *agent* in this operation; the *accuſative* by the ſubſtance EARTH, which is as certainly the object acted upon. Not as *qualities* of the SUN and EARTH; for qualities inhering in their ſubſtances can only be expreſſed by *adjectives*, and the words *air* and *beams* are both *ſubſtantives*. Here then we muſt have recourſe to prepoſitions; but we can employ only ſuch prepoſitions as point out the *relations* which the AIR and the BEAMS have to the *ſun warming the earth*. In Engliſh we ſhould ſay, *the ſplendid ſun* WITH *his beams genially warmeth* THROUGH *the air the fertile* earth. The ſentence, as before, remains *entire* and *one*; the *ſubſtantives* required are both *introduced*; and not a word which was there before is detruded from its proper place. The import of WITH we have already diſcovered; it directs to UNITE the *beams* to the *ſun*, as JOINTLY with him performing the operation. But the AIR has no other connection with this operation, than as the MEDIUM or PASSAGE between the SUN and the EARTH: and therefore the prepoſition THROUGH (X) muſt denote that *relation* which ſubſiſts between an *object* in *motion*, and the *medium in which it moves*; nor could a prepoſition of a different import have been employed, without altering the meaning of the whole ſentence (Y).

107. Mr Harris is of opinion that moſt, if not all, pre-

(U) This account of prepoſitions is taken from *Horne Tooke*; who adds, that the only difference between the two words WITH and JOIN, is, that the other parts of the Gothic and Anglo-Saxon verb WITHAN, *to join*, (of which WITH is the imperative), have ceaſed to be employed in the language. As WITH means *join*, ſo the correſpondent French prepoſition AVEC means, *and have that*, or, *have that alſo*. But though WITH, as the imperative of WITHAN, means *join*, it has ſometimes a very different ſignification. Mr *Tyrwit* in his Gloſſary has truly obſerved, that WITH and BY are often ſynonymous. They certainly are ſo: but then WITH ſeems to be an abbreviation of the imperative of WYRTHAN *to be*; as WITHOUT is of WYRTHAN-UTAN *to be out*. This being the caſe, our two inſtances in the text will ſtand thus: *a houſe* JOIN *a party wall*; *a houſe* BE-OUT *a roof*. Nor let any one be ſurpriſed that we make no difference between the *conjunction* WITHOUT and the prepoſition WITHOUT. The word is the ſame, whether it be employed to unite *words* or *ſentences*. *Prepoſitions* were originally, and for a long time, claſſed with *conjunctions*; and when firſt ſeparated from them, they were only diſtinguiſhed by the name of *prepoſitive conjunctions*. They are *generally* uſed to unite *words*, but not *always*; for we may ſay indifferently, *I came after* HIS DEPARTURE, or *I came after* HE DEPARTED. By the greater part of grammarians indeed, AFTER, when employed as in the firſt ſentence, is claſſed with the prepoſitions; when employed as in the ſecond, it is claſſed with the conjunctions. The word, however, is the ſame in both ſentences; its *meaning* is the ſame, and its *effect* preciſely the ſame. The only circumſtance of diſcrimination is, that in the firſt example it is prefixed to a noun, *his departure*; in the ſecond, it is prefixed to a nominative and a verb *he departed*. But even the nominative and the verb, thus applied, expreſs no more than a ſpecifying circumſtance annexed to the other propoſition, *I came*; and whenever they are rightly apprehended by the mind, they are ſtript of their prepoſitionary form, and conſidered *abſtractly* under a new phaſis, *~~his~~ departure*. Thus then, the two ſentences are ſynonymous in every reſpect, excepting the *apparent* grammatical nature of the words *his departure*, and *he departed*; and even theſe are reduced to one grammatic form in the mind, whenever the import of the prepoſitions is rightly apprehended. WITHOUT, and many other prepoſitions, eſpecially in the learned languages, are uſed exactly as AFTER is uſed in the two inſtances which we have given. *Horne Tooke*, quotes Lord Mansfield for ſaying, "It cannot be read WITHOUT the Attorney General conſents to it." This, in modern Engliſh, is not the common phraſeology; but it offends not againſt any principle of grammar. The *nominative and the verb* are here, as in the former inſtance, conſidered as an *abſtract noun*; "It cannot be read WITHOUT the conſent of the Attorney General."

(X) THOROUGH, THOUROUGH, THOROW, THROUGH, or THRO', is no other, ſays *Horne Tooke*, than the Gothic ſubſtantive DAURO, or the Teutonic ſubſtantive THURUH, and, like them, means *door*, *gate*, *paſſage*. So that the ſentence in the text, reſolved upon his principles, ſtands thus: "The ſplendid ſun—JOIN his beams—genially warmeth—PASSAGE *the air*, (or, the air being the *paſſage* or *medium*)—the fertile earth." And in the ſame manner may we tranſlate the prepoſition *through* in every inſtance where *through* is uſed in Engliſh, or its equivalent prepoſition in any language; as from the Latin and Italian word *porta*, (in Spaniſh *puerta* and in French *porte*), have come the Latin and Italian prepoſition *per*, the French *par* and the Spaniſh *por*.

(Y) If, for inſtance, we were to ſubſtitute WITH or OF inſtead of THROUGH, we ſhould in the one caſe *alter* the *meaning*

128 Prepoſitions originally denoted the various relations of body.

prepoſitions were originally formed to denote the *relations of* PLACE. For this opinion we ſee not ſufficient evidence. If indeed we could ſuppoſe the *inventors* or earlieſt *improvers* of language to have at all concerned themſelves with *relations* as *abſtracted* from the *objects* related, we muſt believe that thoſe which firſt attracted their attention were the *relations* ſubſiſting among themſelves, and the various bodies with which they are ſurrounded. We muſt likewiſe agree with our author, that *place* is the grand relation which *bodies* or *natural ſubſtances* maintain at all times to one another; but we do not therefore, think that it would attract the *earlieſt* notice of untaught barbarians. On the contrary, we are of opinion that mankind muſt have made very conſiderable progreſs in ſcience before they attempted to abſtract *place* from *body;* an attempt which, according to ſome of the moſt profound philoſophers (z), is not only difficult, but abſolutely impracticable. But whatever be in this, the relations of *cauſe* and *effect*, of *duration* and *motion*, are in themſelves as *obvious*, and as likely to *arreſt* the *attention* and obtain *names*, as thoſe of *place*. Among men totally illiterate they are evidently more ſo; for *pain* and *pleaſure* would ſuggeſt ſome idea of cauſe and effect as *matters of importance*.

129 And were at firſt either verbs or nouns.

There is, however, no probability that the inventors of any language had the leaſt idea of *abſtract relations*. They doubtleſs expreſſed *complex conceptions* by *nouns* and *verbs*, ſignificant at once of the *particular ideas* and of the *various relations* by which they viewed thoſe ideas as *combined together* in a *complex conception*. Afterwards, when men's minds became enlarged, and when, from the fluctuation inſeparable from a living language, objects or ideas received new names, the old words, whether nouns or verbs, which were originally employed to expreſs a *particular complex conception*, of which *certain particular* RELATIONS made a part, might be retained for the purpoſe of denoting *thoſe* and *all ſimilar* RELATIONS; and thus *verbs* and *nouns* would degenerate into *particles* bearing the names of *prepoſitions* and *conjunctions*. For inſtance, one *Anglo-Saxon* being deſirous to communicate to another his own conception of *a houſe with a party-wall*, and having (we ſhall ſuppoſe) no ſuch word in his tongue as a *prepoſition*, would naturally utter the word *houſe*, deſiring his friend, at the ſame time, to *add* to that well known ſound *another ſound* (uttering it) ſignificant of the particular circumſtance wanting to complete his *complex conception;—A houſe* WITH (i. e. JOIN) *a party wall*. The word WITH, as the *imperative* of a *verb*, denotes of courſe *three ideas* combined together, viz. a *command* or *wiſh*, an *affirmation*, and the idea of *junction*. But when the verb WITHAN was diſmiſſed from the Engliſh language, the imperative WITH was ſtill retained; but loſing its *verbal* and *modal* nature, it was thenceforth employed to denote only *one* of the *three ideas* for which it originally ſtood, viz. the idea of *junction*. And thus it is, that *verbs*, and alſo *nouns* and *adjectives*, in paſſing from one language to another, may become *prepoſitions* (A) and *conjunctions*. Thus too it is, that ſome of thoſe *prepoſitions* come to denote the *contiguous*, and ſome the *detached* relation of body. The *contiguous*, as when we ſay, *Caius walked* WITH *a ſtaff;* i. e. *Caius*, JOIN *a ſtaff, walked*; *the ſtatue ſtood* UPON (B) *a pedeſtal*, i. e. *the ſtatue ſtood* (the *place* of its ſtanding) the HIGHNR PART *of a pedeſtal*; *the river ran* OVER *a ſand*, i. e. *the river ran* (the place of its running) *the* HIGHER PART *of a ſand*. The *detached* relation, as when we ſay, *He is going* TO (C) *Italy*, i. e. *He is going*, THE

END

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meaning, and in the other ſpeak *nonſenſe*. "The ſun warmeth WITH the *air* the fertile earth," is an affirmation that *the ſun warmeth* BOTH THE AIR AND THE EARTH; whereas the original ſentence affirmed nothing more than that *he warmeth the* EARTH. "The ſun warmeth OF the air the fertile earth," is nonſenſe, as it makes the earth a *part*, or a *conſequence*, of the air. So neceſſary is it that prepoſitions have a *meaning*, and that the meaning of each be attended to.

(Z) The Biſhops BERKELEY and LAW, with the very learned and ingenious Principal CAMPBELL of Aberdeen. See *The Principles of Human Knowledge*, LAW's *Notes* on KING's *Origin of Evil*, and *The Philoſophy of Rhetoric*.

(A) As the Italian ſubſtantive CASA, a *houſe*, *race*, *family*, *nation*, &c. in paſſing to the French, becomes the prepoſition CHEZ, to which there is not, ſo far as we know, a prepoſition of preciſely the ſame import in any language. SENZA or SENZE in Italian becomes SANS in French, and means *abſence*. Nor is it neceſſary that *verbs* and *nouns* ſhould always paſs from one language to another, in order to be converted into *prepoſitions*: The Greek prepoſition χωρις is evidently the corrupted imperative of χωριζειν *to ſever, to disjoin, to ſeparate*. The Latin SINE is SIT NE, *be not*. The German SONDER is the imperative of SONDERN, which has the ſame meaning as χωριζειν.

(B) UP, UPON, OVER, BOVE ABOVE, have all, ſays *Horne Tooke*, one common origin and ſignification. In the Anglo-Saxon, UFA, UFERA, UFEMÆST, are the *adjectives* ALTUS, ALTIOR, ALTISSIMUS. UFA or UFAN, *up;* comparative UFERA, OFERE or OFER, *over* or *upper*; ſuperlative UFEMÆST, *upmoſt* or *uppermoſt*. BE-UFAN, BUFAN, ON-BUFAN, *bove*, *above*. If this be a juſt account of the origin of theſe words, the ſentences in the text, where *upon*, *over*, and *above*, occur, will run thus: The ſtatue ſtood ON HIGH a pedeſtal;" "the river ran HIGHER a ſand;" "the ſun is riſen ON HIGH the hills." And here we may obſerve, that the mere *relation* between *ſtanding*, *running*, &c. and *place*, is rather *inferred* from the *verb itſelf*, than *expreſſed* by a *ſeparate word;* and the reaſon is obvious. For if a ſtatue *ſtand*, every one knows that it muſt ſtand *on* ſome thing as well as *at* ſome time. There is therefore no *neceſſity*, whatever *elegance* there may be in it, for employing any word to denote that *relation*, which is commonly believed to be ſignified by *on;* but it is *neceſſary* to inſert, between the *verb* and *pedeſtal*, a *word* ſignificant of *place*, that *pedeſtal* may not be miſtaken, by an ignorant perſon, for a *portion of time*, or any thing elſe connected with the *ſtanding of the ſtatue*.

(C) That TO is ſignificant of *detached* relation, is the language of Mr Harris, which, though it may be allowed in a looſe and vulgar ſenſe, is certainly not philoſophically juſt. The prepoſition TO (in Dutch written TOE and TO) is the Gothic ſubſtantive; TAUI or TAUHTS ſignifying *act*, *effect*, *reſult*, or *conſummation*; which Gothic ſubſtantive is itſelf no other than the paſt participle TAUID or TAUIDS of the verb TAUGAN *agere*. And

it

END (of his journey) *Italy*; *the ſun is riſen* ABOVE *the hills*, i. e. *the ſun is riſen* (the place) THE TOP *of the hills*; *theſe figs came* FROM *Turkey*, i. e. *theſe figs came* BEGINNING (their journey at) *Turkey*.

Beſides the *detached* relation of body, Mr *Harris* is of opinion that the prepoſition FROM denotes two other relations not leſs different than thoſe of *motion* and *reſt*. Thus if we ſay, "*That lamp hangs* FROM *the cieling*, the prepoſition FROM aſſumes a character of *quieſcence*. But if we ſay, *That lamp is falling* FROM *the cieling*, the prepoſition in ſuch caſe aſſumes a character of *motion*." But this is evidently a miſtake: the *detached relation* in the former inſtance of the *figs*, as well as the *motion* and *reſt* in the preſent inſtances, are expreſſed *not* by the *prepoſition*, but by the verbs *came*, *falls*, *hangs*. The word *from* has as clear, as preciſe, and at all times as uniform and unequivocal a meaning, as any word in the language, FROM means merely BEGINNING, and nothing

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it is obvious, that what is *done* is *terminated*, *ended*, *finiſhed*. In the Teutonic, this verb is written TUAN or TUON; whence the modern German THUN, and its propoſition TU. In the Anglo-Saxon, the verb is TEOGAN, and the prepoſition TO. Do, the auxiliary verb, as it has been called, is derived from the ſame root, and is indeed the ſame word as TO. The difference between a T and a D is ſo very ſmall, that an etymologiſt knows by the *practice* of languages, and an anatomiſt by the *reaſon* of that practice, that in the derivation of words it is ſcarce worth regarding. To ſupport this etymon of TO, Mr *Horne Tooke* gives a ſimilar inſtance in the Latin tongue. The prepoſition AD, he ſays is merely the paſt participle of AGERE, which paſt participle is likewiſe employed as a Latin *ſubſtantive*. He exhibits the derivation of AD thus:

Agitum—agtum { AGDUM——AGD——AD
or or or
ACTUM——ACT——AT

The moſt ſuperficial reader of Latin verſe (he obſerves), knows how readily the Romans dropped their final *um*. And a little conſideration of the organs and practice of ſpeech will convince him how eaſily AGD or ACT would become AD or AT; as indeed this prepoſition was indifferently written either way by the ancients. By the later writers of Rome, the prepoſition was written AD with D only, in order to diſtinguiſh it from the other corrupt word called the *conjunction* AT; which for the ſame reaſon was written with the T only, though that likewiſe had anciently been written, as the *prepoſition*, either AD or AT. The prepoſition TO and the conjunction TOO in Engliſh, are both in *ſyntax* and in *meaning* uſed exactly as the prepoſition AD and the conjunction AT in Latin. From the ſpecimens prefixed to Johnſon's dictionary, as a hiſtory of our language, it appears that, as late as the reign of Elizabeth, the *prepoſition* and *conjunction* were both written with one O. And it has been ſhown in the firſt volume of *the Tranſactions of the Royal Society of Edinburgh*, that TO and TOO, as well as AD and AT, are preciſely of the ſame import. The only difference, in either language, between the *prepoſition* and the *conjunction*, is, that the former *directs*, as a modification of ſome previous propoſition the addition of ſome *ſubſtantive* or *noun*; the latter, ſometimes a *ſentence* a *clauſe* of a ſentence conſidered *abſtractly* as a noun; and that, when the *former* is uſed, the prepoſition, to which the modifying circumſtance is to be added, is *formally expreſſed*, but *omitted* when the *latter* is employed. Thus *Denham* ſays,

"Wiſdom he has, and, TO his wiſdom courage;
"Temper TO that, and, UNTO all, ſucceſs."

In this example, every ſucceeding circumſtance is by the prepoſition TO marked as an *addition* to the preceding. "Wiſdom he has, and courage *additional* to his wiſdom." But Denham might with equal propriety have omitted the objects which TO governs, or to which it directs ſomething to be *added*, though he muſt then, from the cuſtom of the language, have employed the *conjunction* inſtead of the *prepoſition*. As,

"Wiſdom he has, and courage too," &c.

This mode of expreſſion would have been more conciſe, and as intelligible as the other, "Wiſdom he has, and courage TO *his wiſdom*," &c.

Not only is the object governed by TO omitted, when it is repreſented by a *ſubſtantive* in the context, but alſo when it is involved in a *prepoſition*; and then the conjunction, as it is called, is always uſed. Thus,

"————————Let thoſe eyes that view
"The daring crime, behold the vengeance TOO."

So, "He made him priſoner, and killed him *too*." In the one example, the circumſtance of *beholding the vengeance* is ſtated as an *addition to* the *viewing of the crime*; and in the other, the *killing him* is ſtated as an *addition to* the *making him a priſoner*. In both examples, the object governed by TOO is the *amount* of the preceding propoſition taken *abſtractly* as a *noun* or *ſubſtantive*. Thus then it appears, that TO and TOO, though claſſed the one with the prepoſitions, and the other with the conjunctions, are really one and the ſame word. The ſame is true of AD and AT. Thus, "AD *hoc*, promiſſa barba et capilli efferaverant ſpeciem oris," ſignifies, "*Additional to this*, his long beard and hair had given a wildneſs to his aſpect." But when the object governed by AD is not formally ſtated, AD itſelf is claſſed with the *conjunctions*, and written differently, AT. Thus TERENCE, "PH. Fac ita ut juſſi, deducantur iſti. PA. Faciam. PH. AT diligenter. PA Fiet, PH. AT mature." By the means of AT, the circumſtances of *diligence* and *haſte* are *ſuperadded* to the action commanded. "PH. It is not enough that you do it, you muſt do it carefully TOO. PA. Well, it ſhall be carefully done. PH. In good time TOO." AT, taken in this ſenſe, is moſt commonly employed, like the Engliſh BUT, *to mark the unexpected union of incongruous objects*: As, "Aulam tyranni frequentabat, AT patriam amabat;" literally, "He frequented the court of the tyrant; joined EVEN TO that he loved his country." He was a courtier and a patriot TOO." But if AD and AT in Latin, and TO and TOO in Engliſh, be derived from verbs which ſignify to DO or ACT, it may be aſked how they come themſeves to denote *addition*. The anſwer is obvious.

If

thing elſe. It is ſimply the *Anglo-Saxon* and *Gothic* noun FROM, *beginning, origin, ſource, fountain, author* (D). Now if this meaning be applied to Mr *Harris's* inſtances, FROM will ſpeak clearly for itſelf, without the aſſiſtance of the *interpreting* verbs, which are ſuppoſed by him to *vary its character.*

“ Theſe figs *came* FROM Turkey.”
“ That lamp *falls* FROM the cieling.”
“ That lamp *hangs* FROM the cieling.”

Came is a complex term for one ſpecies of motion; *falls* is a complex term for another ſpecies of motion; and *hangs* is a complex (E) term for a ſpecies of attachment. Have we occaſion to communicate or mention the COMMENCEMENT or BEGINNING of theſe motions, and of this attachment, and alſo the *place where* they commence or begin? To have complex terms for each occaſion of this ſort is abſolutely impoſſible; and therefore nothing can be more natural or more ſimple than to add the ſigns of thoſe ideas, viz. the word BEGINNING (which will remain always the ſame) and the NAME of the *place* (which will perpetually vary). Thus,

“ Theſe figs came—*BEGINNING Turkey.*”
“ That lamp falls—*BEGINNING cieling.*”
“ That lamp hangs—*BEGINNING cieling.*”
That is,
“ Turkey the *place* of BEGINNING to come.”
“ Cieling the *place* of BEGINNING to fall.”
“ Cieling the *place* of BEGINNING to hang.”

It has been ſaid by no leſs a man than biſhop Wilkins, that FROM refers *primarily* to *place*, and *ſecondarily* to *time*. But the truth is, that FROM relates to every thing to which *beginning* relates, and to nothing elſe.

“ FROM morn till night the eternal larum rang.

That is, “ The larum rang BEGINNING morning (or morning being the *time* of its BEGINNING) till night.”

As FROM always denotes *beginning*, ſo TO and TILL always denote the *end*. There is, however, this difference between them, that TO denotes the *end* of *any thing*; TILL the *end* only of *time*. We may ſay indifferently—“ From morn TO night,” or “ from morn TILL night, the eternal larum rang;” but we cannot ſay—“ Theſe figs came from Turkey TILL England.” That TILL can, with propriety, be oppoſed to FROM only when we are talking of *time*, is evident; for it is a word compounded of TO and WHILE, i. e. *time*. And as the coaleſcence of theſe two words TO-WHILE, took place in the language long before the preſent ſuperfluous uſe of the article THE, the phraſe—“ From morn TILL night”—is neither more nor leſs than—*From morn TO TIME* night. When we ſay, “ *from morn TO night*,” the word TIME is omitted as unneceſſary.

Beſides FROM, Mr *Harris* mentions OVER as ſignificant, ſometimes of *motion*, and ſometimes of *reſt*; and quotes, as inſtances, the two following paſſages from *Milton*.

———To ſupport uneaſy ſteps
OVER *the burning marle.*

Here, ſays he, OVER denotes *motion*. Again,

——He with looks of cordial love
Hung OVER *her enamoured.*

Here OVER denotes *reſt*. But the truth is, that OVER denotes neither *motion* nor *reſt* in either of the paſſages. In the firſt quotation, indeed, MOTION is *implied*: but it is implied in the word STEPS; and not in OVER, which denotes only that the *place* of the ſteps was the *top* of the burning marle. In the ſecond quotation, *reſt* is implied, and *that* too a particular *ſpecies* of reſt; but it is *implied* or rather *expreſſed* by the verb HUNG, and OVER denotes the *place* of that ſpecies of reſt.

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They were by degrees extended to ſubjects incorporeal.

108. But though the original uſe of prepoſitions was to denote *the relations of body*, they could not be confined to this office only. They by degrees extended themſelves to ſubjects *incorporeal*; and came to denote relations, as well *intellectual* as *local*. Thus, becauſe in place he, who is *above*, has commonly the advantage over him who is *below*; hence we transfer OVER and UNDER (F) to *dominion* and *obedience*. Of a king, we ſay, *he ruled* OVER *his people*; of a ſoldier, *he ſerved* UNDER *his general*. So too we ſay, *with* thought: *without* attention; thinking *over* a ſubject; *under* anxiety; *from* fear; *through* jealouſy, &c. All which inſtances, with many others of like kind, ſhow, that the *firſt words* of men, like their *firſt ideas*, had an immediate reference to *ſenſible objects*; and that in after days, when they began to diſcern with their *intellect*; they took thoſe words which they

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If a man ſhould utter a ſentence, and to the end of it ſubjoin the very general word DO, the perſon to whom he ſpoke, would naturally aſk, DO what? and this queſtion would, of courſe, produce an *additional* ſentence or clauſe, of a ſentence. Beſides, it is to be obſerved, that AGERE, from which the Latin prepoſition is derived, as well as the Gothic verb, which is the ſource of the Engliſh particles, means not only TO DO, but alſo to *adduce* or *bring*; ſo that when we ſay, “ he is going TO Italy,” we do nothing more than *affirm* that “ he is *going*,” and deſire the perſon to whom we ſpeak, to “ ADD Italy to the journey.”

From this derivation of the prepoſition TO, it will be ſeen at once upon what principle it is employed to mark the infinitive mode. In the learned languages that mode is generally known by its termination; but in Engliſh it would be impoſſible, without the aid of TO or of ſome other word ſignificant of *action*, to diſtinguiſh the VERB *love* from the *noun* or *ſubſtantive*.

(D) This derivation is Mr Horne Tooke's; and he ſupports it by the following ſentence; NE RÆDD GE SE THE ON FRUMMAN WORTHE, HE WORHTE WÆPMAN AND WIFMEN; which is Anglo-Saxon of St Matt. xix. 4. “ Annon legiſtis, quod qui eos *in principio* creavit, creavit eos marem et feminam.”

(E) Theſe are *complex* terms becauſe they are *verbs*. *Each* denotes an *affirmation* and *time*; and combined with theſe, *came* and *falls* denote *motion*, and *hangs* denotes *reſt*.

(F) UNDER and BENEATH, though by the ſound they ſeem to have little connection, are yet in fact almoſt the ſame word, and may very well ſupply each other's place. UNDER is nothing but ON-NEDER, and BENEATH is compounded of the imperative BE and the noun NEATH. NEATH uncompounded having ſlipped away from our language, would perhaps be unintelligible, had not the *nouns* NETHER and NETHERMOST ſtill continued in common uſe. NEATH; Anglo-Saxon, NEOTHAN, NEOTHE; Dutch, NEDEN; Daniſh, NED; German, NIEDRE; and Swediſh, NEDRE and NEDER; is undoubtedly as much a ſubſtantive, and has the ſame meaning, as the word NADIR. In common language it denotes the *bottom*.

they found *already* made, and transferred them by metaphor to *intellectual* conceptions.

Among the relations which may be conſidered rather as intellectual than corporeal, are thoſe of *cauſe* and *conſequence ;* and for the denoting of theſe we have *two prepoſitions*, which ſometimes *appear* in direct *oppoſition* to one another, and at other times may *exchange places* without *injury* to the ſenſe.

"Well! 'tis e'en ſo! I have got the London diſeaſe they call love. I am ſick OF my huſband, and FOR my gallant." *Wycherley's Country Wife.*

Here OF and FOR ſeem almoſt placed in oppoſition ; at leaſt their effects in the ſentence appear to be very different ; for, by the help of theſe two prepoſitions alone, and without the aſſiſtance of any other words, ſhe expreſſes the two contrary affections of *loathing* and *deſire*. The truth, however, is, that the author, if it had pleaſed him, might have uſed OF where he has employed FOR, and FOR where he has put OF. This is evident from the following quotation :

> "Marian. *Come, Amie, you'll go with us.*"
> "Amie. *I am not well.*"
> "Lionel. *She's ſick* OF *the young ſhepherd that bekiſt her.*" Sad Shepherd.

In the ſame manner we may, with equal propriety, ſay—"We are ſick OF hunger ;" or—"We are ſick FOR hunger." And in both caſes we ſhall have expreſſed preciſely the ſame thing, with only this difference, that, in the former ſentence, we *declare ſickneſs* to be a CONSEQUENCE ; in the latter, we *declare hunger* to be a CAUSE. But to return to the poor *country wife ;* that poor lady ſeems to have had a complication of diſtempers ; ſhe had, at leaſt, two diſorders—a ſickneſs OF *loathing*, and a ſickneſs OF *love*. She was ſick FOR diſguſt, and ſick FOR love. She was

> *Sick* OF *diſguſt* FOR *her huſband ;*
> *Sick* OF *love* FOR *her gallant.*
> *Sick* FOR *diſguſt* OF *her huſband.*
> *Sick* FOR *love* OF *her gallant.*

In the firſt ſentence, as thus ſtated, *ſickneſs* is declared to be the CONSEQUENCE of *diſguſt*, of which *her huſband* is declared to be THE CAUSE. In the ſecond, *ſickneſs* is declared to be the CONSEQUENCE OF LOVE, of which her *gallant* is declared to be the CAUSE. In the third ſentence, DISGUST is declared to be the *CAUSE of her ſickneſs*, and the CONSEQUENCE or OFFSPRING of her *huſband*. In the fourth, *love* is declared to be the CAUSE of her *ſickneſs*, and the CONSEQUENCE or OFFSPRING of her *gallant*.

Thus, then, it appears, that though the *two firſt* of theſe ſentences, taken entire, convey the very ſame meaning with the *two laſt*, yet the import of the prepoſition FOR is as different from that of OF, as CAUSE is from CONSEQUENCE (G). When two *words* or *ſentences* are linked together by the *former* of theſe prepoſitions, the *object* expreſſed by the *laſt* word or ſentence is declared to be the CAUSE of that which is expreſſed by the *preceding ;* when two *words* or ſentences are linked together by the *latter* prepoſition, the *object* expreſſed by the *firſt* word or ſentence is declared to be the CONSEQUENCE OF, or to PROCEED FROM, the *object* expreſſed by the *ſecond*. It is therefore a matter of perfect indifference to the ſenſe, whether we ſay *ſickneſs* OF *hunger*, or *ſickneſs* FOR *hunger ; The man,* OF *he ſpeaks little, is wiſe*, or *the man is wiſe,* FOR *he ſpeaks little*. By means of the prepoſition OF, we declare *ſickneſs* to be the CONSEQUENCE proceeding from *hunger*, and *wiſdom* to be the CONSEQUENCE we infer from the *man's ſpeaking little ;* by means of FOR we declare *hunger* to be the CAUSE of *ſickneſs*, and the circumſtance of *ſpeaking little* to be the CAUSE from which we infer the *man's wiſdom*. In the one ſentence, OF is to be conſidered as a *noun* in *appoſition* to *ſickneſs* ; in the other, as a *noun* in *appoſition* to *the man is wiſe* taken *abſtractly* as a *noun*. In the one ſentence, FOR (i. e. CAUSE) is to be conſidered as a *noun* in *appoſition* to *hunger ;* in the other, as the *ſame noun* in *appoſition* to *he ſpeaks little*, taken *abſtractly* as *noun*.

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Prepoſitions compounded with other words.

109. In the foregoing uſe of prepoſitions, we have ſeen how they are applied by way of *juxta-poſition ;* that is to ſay, where they are perfixed to a word without becoming a part of it. But they are uſed alſo *by way of compoſition ;* that is, they are perfixed to other words ſo as to become real parts of them. Thus in *Greek* we have επιστασθαι ; in *Latin*, *intelligere* ; and in *Engliſh* UNDER*ſtand*. So alſo, to FORE*tel*, to OVER*act*, to UNDER*value*, to OUT*go*, &c.; and in *Greek* and *Latin* other inſtances innumerable. In this caſe the prepoſitions commonly transfuſe ſomething of their own meaning into the word with which they are compounded

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Transfuſe ſomething of their own meaning into thoſe words.

For example, if we ſuppoſe ſome given ſpace, E and EX ſignify *out of* that ſpace; PER, *through it ;* IN, *within it ;* SUB, *under it*. Hence E and PER, in compoſition *augment*, *Enormis* is ſomething not ſimply big, but big in exceſs; ſomething got *out of the rule*, and *beyond the meaſure*. *Dico*, "to ſpeak ;" *Edico*, "to ſpeak out ;" whence *Edictum* "an edict," ſomething ſo effectually ſpoken as all are ſuppoſed to hear and all to obey.—On the contrary, IN and SUB diminiſh and leſſen. *Injuſtus iniquus*, "UNjuſt, INequitable ;" ſomething that lies *within* juſtice and equity, that reaches not ſo far, that falls *ſhort of them*. SUB*niger*, "blackiſh ;" SUB*rubicundus*, "reddiſh :" *tending* to black, and *tending* to red ; but yet *under* the ſtandard, and *below* perfection,

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Their real import how to be diſcovered,

110. Before we diſmiſs this part of our ſubject, we ſhall make the ſame general remark on *prepoſitions* that we formerly made on *conjunctions ; viz.* that the preciſe import of each can with certainty be known only by tracing it to its *ſource* in ſome word of *known* and *determinate* meaning, either in the language where the prepoſition itſelf has place, or in ſome parent or cognate tongue. And it may be laid down as an infallible rule, that where different languages uſe the ſame or a ſimilar *particle*, that language ought to be conſidered as its legitimate parent, in which the true meaning of the word can be found, and where its uſe is as common and familiar as that of any other verbs and ſubſtantives.

(G) *Junius* derives FOR from the Greek προ ; *Skinner*, from the Latin *pro* ; but I believe, ſays *Horne Tooke*, that it is no other than the Gothic ſubſtantive FAIRINA, "cauſe." He imagines alſo that OF (in the Gothic and Anglo-Saxon AF) is a fragment of the Gothic and Anglo-Saxon words AFARA and AFORA, *poſteritas*, *proles*, &c. In a word, he conſiders FOR and OF as nouns or ſubſtantives ; the former always meaning *cauſe*, the latter always meaning *conſequence*, *offſpring*, *ſucceſſor*, *follower*, &c. If this account of theſe words be juſt, and we have no doubt of it, the prepoſitions FOR and OF are in ſyntax to be conſidered as *nouns* in *appoſition* with other *nouns*, or with ſentences taken *abſtractly* as nouns.

ſtantives. When prepoſitions can be traced to ſuch ſources as theſe, no room can be left for diſputes concerning their meaning. In carrying on this etymological purſuit, we find advantages in the nature of *prepoſitions* which *conjunctions* do not afford us. WITH and WITHOUT, FROM and TO, with many other words belonging to this claſs, have meanings directly oppoſite and contradictory to each other. If, then, by the total or partial extinction of an original language, the root of any one prepoſition be loſt, whilſt that of its oppoſite remains, the philoſopher ought to be ſatisfied with reaſoning from *contrariety*; as nothing is more evident, than that the meaning of a word is known when we know with preciſion the meaning of its oppoſite. When we meet, however, with a luckleſs prepoſition of which no root is left to be dug up, and which has itſelf no direct oppoſite in the language, nothing remains but that we inquire for what purpoſe it is uſed by the beſt writers both ancient and modern; and if we can fix upon *one meaning* which will apply, however aukwardly, to all the places where it occurs, or to the greater part of them, the probability is, that we have diſcovered the *true* and *original* (H) meaning of the prepoſition; and by keeping that meaning conſtantly in view, we ſhall ourſelves be enabled to uſe the word with perſpicuity and preciſion.

SECT. III. Of INTERJECTIONS.

134 The interjection not properly any part of ſpeech.

III. Beſides the above parts of ſpeech, there is another acknowledged in all the languages of Europe, called the INTERJECTION; a word which cannot be comprehended under any of the foregoing claſſes. The *genuine interjections* are very few in number, and of very little importance, as they are thrown into a ſentence without altering its *form* either in *ſyntax* or in *ſignification*. In the words of *Horne Tooke*, the brutiſh *inarticulate* interjection has nothing to do with ſpeech, and is only the miſerable refuge of the ſpeechleſs. The dominion of ſpeech, according to the ſame author, is erected on the downfall of *interjections*. Without the artful contrivances of language, mankind would have nothing but *interjections* with which to communicate orally any of their feelings. "The neighing of a horſe, the lowing of a cow, the barking of a dog, the purring of a cat, ſneezing, coughing, groaning, ſhrieking, and every other involuntary convulſion with oral ſound, have almoſt as good a title to be called parts of ſpeech as *interjections*. In the intercourſe of language *interjections* are employed only when the ſuddenneſs or vehemence of ſome affection or paſſion returns men to their natural ſtate, and makes them for a moment forget the uſe of ſpeech; or when, from ſome circumſtance, the ſhortneſs of time will not permit them to exerciſe it." The genuine interjection, which is always expreſſive of ſome very ſtrong ſenſation, ſuch as AH! when we feel pain, does not owe its characteriſtical expreſſion to the arbitrary form of articulation, but derives its whole force from the tone of voice and modification of countenance and geſture. Of conſequence, theſe tones and geſtures expreſs the ſame meaning, without any relation to the articulation which they may aſſume; and are therefore univerſally underſtood by all mankind. *Voluntary* interjections are uſed in books only for embelliſhment, and to mark forcibly a ſtrong emotion. But where ſpeech can be employed, they are totally uſeleſs; and are always inſufficient for the purpoſe of communicating thought. Dr Beattie ranks *ſtrange*, *prodigious*, *amazing*, *wonderful*, *O dear*, *dear me*, &c. when uſed alone, and without apparent grammatical ſyntax, among the *interjections*: but he might with as much propriety have conſidered *hardly*, *truly*, *really*, and even many Latin *verbs*, as *interjections*; for theſe too are often uſed *alone* to ſupply the place of *whole ſentences*. The truth is, that all men, when ſuddenly and violently agitated, have a ſtrong tendency to ſhorten their diſcourſe by employing a *ſingle word* to expreſs a *ſentiment*. In ſuch caſes, the word employed, whether *noun*, *adjective*, or *verb*, would be the *principal* word of the ſentence, if that ſentence were completed; and the *agitation* of the ſpeaker is ſuch, and the *cauſe* of it ſo obvious, that the hearer is in no danger of miſtaking the *ſenſe*, and can himſelf ſupply the words that are wanting. Thus if a perſon, after liſtening to a romantic narrative, were to exclaim, *ſtrange!* would any man of common ſenſe ſuppoſe, that the word *ſtrange*, becauſe uttered alone, had loſt the power of an *adjective* and became an *interjection?* No, ſurely: Every one ſees, that the exclamation is equivalent to, *That is* STRANGE, or *That is a* STRANGE *ſtory*. *Real* interjections are never employed to convey *truth* of any kind. They are not to be found amongſt *laws*, in books of *civil inſtitutions*, in *hiſtory*, or in any treatiſe of uſeful *arts* or *ſciences*; but in *rhetoric* and *poetry*, in *novels*, *plays*, and *romances*, where in Engliſh, ſo far from giving *pathos* to the ſtyle, they have generally an effect that is diſguſting or ridiculous.

HAVING now analyſed *every part* of ſpeech which can be neceſſary for the *communication of thought*, or which is acknowledged in any language with which we are acquainted; we ſhall diſmiſs the article of *Grammar*, after annexing a Table, which may preſent at one view the ſeveral *claſſes* and *ſubdiviſions of words*. Of the different modes of dividing the parts of ſpeech, as well as of the little importance of *ſyſtematic claſſifications*, we have already declared our decided opinion: but for the ſake of thoſe who may think differently from us, we ſhall in the annexed Table adopt Mr *Harris*'s claſſification as far as it is intelligible; after informing our readers that Mr *Horne Tooke* admits only *three* parts of ſpeech, the *article*, the *noun*, and the *verb*, and conſiders all other words as corruptions or abbreviations of the two laſt of theſe.

GRAM-

(H) For inſtance, let us ſuppoſe that *Horne Tooke*'s derivation of FOR, from the Gothic ſubſtantive FAIRINA, is fanciful and ill-founded; yet there can be little doubt but CAUSE is its true and original meaning, when it is found, that of ſixteen examples brought by *Greenwood*, and forty-ſix by *Johnſon*, of different ſignifications of the word FOR, there is not one where the *noun* CAUSE may not be ſubſtituted inſtead of the *prepoſition* FOR; ſometimes indeed aukwardly enough, but always *without injury* to the *ſenſe*. Even where FOR ſeems to be *loco alterius*, which *Lowth* aſſerts to be its *primary ſenſe*, it will be found to be CAUSE, and nothing elſe: Thus, *He made conſiderable progreſs in the ſtudy of the law before he quitted that profeſſion* FOR *this of poetry*; i. e. *before he quitted that profeſſion, this of poetry* being *the* CAUSE of his quitting it.

[*To face* p. 90. (Vol. VIII.)

A
GRAMMATICAL TABLE,
EXHIBITING
A Syſtematic View of WORDS as they are commonly arranged into diſtinct CLASSES, with their Subdiviſions.

- All LANGUAGE is compoſed of WORDS; each of which may be defined, A SOUND SIGNIFICANT OF SOME IDEA OR RELATION. Theſe words may be arranged into four general diviſions, called
  - SUBSTANTIVES; which are all thoſe words that are expreſſive of THINGS WHICH EXIST OR ARE CONCEIVED TO EXIST OF THEMSELVES, AND NOT AS THE ENERGIES OR QUALITIES OF ANY THING ELSE. Theſe may be divided into two orders, *viz.*
    - NOUNS, properly ſo called, being the NAMES OF ALL THOSE THINGS WHICH EXIST, or are CONCEIVED TO EXIST. Theſe may be divided into three kinds, each of which admits of the ſubdiviſions after mentioned, *viz.*
      - NATURAL, or thoſe which are uſed as the NAMES OF NATURAL SUBSTANCES; Such are
      - ARTIFICIAL, or the ſeveral names of ARTIFICIAL OBJECTS; ſuch as,
      - ABSTRACT, or thoſe which are the names of QUALITIES conſidered as ABSTRACTED FROM THEIR SUBSTANCES; ſuch as,

	GENUS.	SPECIES.	INDIVIDUAL.
NATURAL	ANIMAL,	MAN, DOG,	ALEXANDER, CYRUS, *&c.* CERBERUS, ARGUS, *&c.*
ARTIFICIAL	EDIFICE,	HOUSE, CHURCH,	THE VATICAN, *&c.* ST PAUL'S, *&c.*
ABSTRACT	MOTION.	FLIGHT, COURSE,	THE FALCON'S FLIGHT, *&c.* THE GRE-HOUND'S COURSE, *&c.*

Nouns of all kinds admit of the following ACCIDENTS, *viz.*

- GENDER, which is a certain affection of nouns denoting the ſex of thoſe ſubſtances of which they are names. For as in nature every object is either *male* or *female*, or *neither the one nor the other*, grammarians, following this idea, have divided the *names of beings* into three *claſſes*. Thoſe that denote *males*, are ſaid to be of the MASCULINE *gender*; thoſe that denote *females*, of the FEMININE *gender*; and thoſe which denote *neither the one nor the other*, of the NEUTER *gender*. The Engliſh is the only language of which the nouns are, with reſpect to ſex, an exact copy of nature.
- NUMBER. As there is no object in nature ſingle and alone, and as by far the greater part of nouns are the names of whole *claſſes* of objects, it is evident that every *ſuch* noun ought to have ſome variation, to denote whether it is *one individual* of the claſs which is meant, or *more* than one. Accordingly we find, that in every language nouns have ſome method of expreſſing this. If *one* be mentioned, the noun is uſed in that form which is called the SINGULAR *number*; if *more* than one, it is uſed in a different form, which is called the PLURAL *number*.
- CASES. All nouns except *proper names* are *general terms*; but it is often neceſſary to uſe thoſe *general terms* for the purpoſe of expreſſing *particular ideas*. This can be done only by connecting the *general term* with ſome word ſignificant of a *quality* or *circumſtance peculiar* to the individual intended. When that quality or circumſtance is not expreſſed by an *adjective*, it is in Engliſh and moſt modern languages *commonly connected* with the noun by the intervention of a *prepoſition*; but in the Greek and Latin languages the noun has CASES to anſwer the ſame end, and even in Engliſh the noun has, beſides the nominative, *one caſe* to denote poſſeſſion.

    - And
    - PRONOUNS, which are a ſpecies of words invented to SUPPLY THE PLACE OF NOUNS IN CERTAIN CIRCUMSTANCES. They are of two kinds, *viz.*
      - PREPOSITIVE; ſo called becauſe they are capable of LEADING A SENTENCE. Theſe are divided into three orders, called the pronouns of the
        - FIRST PERSON; in Engliſh, *I*. This pronoun denotes the SPEAKER AS CHARACTERIZED BY THE PRESENT ACT OF SPEAKING, in contradiſtinction to *every other character* which he may bear. It is ſaid to be of the FIRST PERSON, becauſe there muſt neceſſarily be a *ſpeaker* before there can be a *hearer*; and the *ſpeaker* and hearer are the *only* perſons employed in *diſcourſe*.
        - SECOND PERSON,—THOU. This pronoun denotes, THE PERSON ADDRESSED AS CHARACTERIZED BY THE PRESENT CIRCUMSTANCE OF BEING ADDRESSED, in contradiſtinction, *&c.* It is ſaid to be of the SECOND PERSON, becauſe in diſcourſe there cannot be a *hearer* till there be a *ſpeaker*. The pronouns of the *firſt* and *ſecond perſons* have *number* and *caſes*, for the ſame reaſon that nouns have theſe accidents; but in no language have they any variation denoting *gender*: the reaſon is, that SEX, and all other properties and attributes whatever, except thoſe juſt mentioned as deſcriptive of the nature of theſe pronouns, are foreign from the mind of the ſpeaker when he utters *I* or *THOU* in diſcourſe.
        - THIRD PERSON,—HE, SHE, IT; which words are employed to denote *any object* which may be the ſubject of diſcourſe *different from the ſpeaker and the hearer*. They are improperly ſaid to be of *any perſon*; for there can be but *two perſons* employed in diſcourſe, *the ſpeaker* and the *party addreſſed*. They are, however, PRONOUNS; ſince they ſtand by themſelves, and are the *ſubſtitutes* of NOUNS. HE, is the ſubſtitute of a noun denoting a *male animal*; SHE, of a noun denoting a *female animal*; and IT, of a noun denoting an *object* which has *no ſex*. All theſe, like the pronouns *perſonal*, admit of NUMBER and CASES; but there is this peculiarity attending them, that though in every caſe of the *ſingular* number the diſtinction of gender is carefully preſerved, in the plural it is totally loſt; THEY, THEIRS, and THEM, being the *nominative*, *poſſeſſive*, and *accuſative*, caſes of HE, of SHE, and of IT.
      - And
      - SUBJUNCTIVE; ſo called, becauſe it cannot lead a ſentence, but only ſerves to ſubjoin a clauſe to another which was previous. Of this kind are
        - WHICH and WHO. This ſubjunctive pronoun may be ſubſtituted in the place of *any noun whatever*, whether it be expreſſive of a *genus*, a *ſpecies*, or an *individual*; as the *animal* WHICH, the *man* WHO, *Alexander* WHO, *&c.* Nay, it may even becomes the ſubſtitute of the *perſonal pronouns themſelves*; as when we ſay, *I* WHO *now write*, *you* WHO *now read*, *thou* WHO *readeſt*, *he* WHO *wrote*, *ſhe* WHO *ſpoke*; where it is obſervable, that the *ſubjunctive* WHO adopts the PERSON of that *prepoſitive* pronoun which it repreſents, and affects the *verb* accordingly. WHO and WHICH therefore are *real pronouns* from ſubſtitution; and they have this peculiarity beſides, that they have not only the power of a *pronoun*, but alſo of a *connective* of the ſame import with that which in Engliſh is expreſſed by the prepoſition OF. The word THAT is now uſed indifferently for WHO or WHICH, as a *ſubjunctive pronoun*; but it was originally uſed only as a *definitive*, and as ſuch it ought ſtill to be conſidered in *philoſophical grammar*.
  - And
  - ATTRIBUTIVES; which are thoſe words that are expreſſive of ALL SUCH THINGS AS ARE CONCEIVED TO EXIST NOT OF THEMSELVES, BUT AS THE ATTRIBUTES OF OTHER THINGS. Theſe are divided into
    - VERBS, or thoſe words which are expreſſive of an ATTRIBUTE and an ASSERTION; as, I WRITE. They all admit of the variations after mentioned.
      - The *attributes* expreſſed by VERBS have their eſſence in *motion* or its *privation*; and as *motion* is always accompanied by *time*, therefore verbs are liable to certain variations called TENSES, *viz.*
        - THE PRESENT, which repreſents the action of the verb as *going on*, and as *contemporary* with *ſomething elſe*; as I WRITE, or I AM WRITING, either *juſt now*, or *when you are reading*, &c.
        - THE PRÆTER-IMPERFECT, which repreſents the action of the verb as *having been going on* but *not finiſhed* in ſome portion of *paſt time*; as I WAS WRITING, *no matter when*, *yeſterday*, *laſt week*, or *laſt year*.
        - THE AORIST OF THE PAST, which repreſents the action of the verb as *finiſhed* in ſome *indefinite portion* of *paſt time*; as I WROTE, or DID WRITE, *yeſterday*, *laſt week*, &c.
        - THE PRÆTER-PERFECT, which repreſents the action of the verb as juſt NOW *finiſhed*, or as finiſhed in ſome portion of time, within which the *preſent inſtant is comprehended*; as I HAVE WRITTEN *this day* or *this week*.
        - THE PLUSQUAM-PERFECT, which repreſents the action of the verb as having been *finiſhed* in ſome portion of time, within which a *determinate paſt time was comprehended*; as I HAD WRITTEN *laſt week before I ſaw you*.
        - THE FIRST FUTURE, which repreſents the action of the verb as *to be going on* at ſome *indefinite future time*; as, I SHALL WRITE or BE WRITING *to-morrow*, *next week*, &c.
        - THE SECOND FUTURE, which repreſents the action of the verb as *to be completed* at ſome *definite future time*; as, I SHALL HAVE WRITTEN *when you come to-morrow*, *next week*, &c.
      - AFFIRMATION is the ESSENCE of every verb; inſomuch that *all verbs* may be reſolved into the ſubſtantive verb IS, and another *attributive*. But a man may *affirm* ſomething of the ACTION of the verb *directly*; ſomething of his LIBERTY or CAPACITY to *perform* that action; or ſomething of his WISH that *another* ſhould perform it. To denote theſe ſeveral kinds of affirmation, all verbs have what grammarians call MODES, *viz.*
        - THE INDICATIVE, to denote the *firſt* kind of *affirmation*; as, I WRITE.
        - THE SUBJUNCTIVE, to denote the *ſecond*; as, I MAY or CAN *write*.
        - THE IMPERATIVE, to denote the *third*; as, *write* THOU, or DO THOU *write*.
        - Beſides theſe, grammarians have given to every verb a MODE, called
        - THE INFINITIVE; as, TO WRITE. But this ſeems, on every account to be improperly ſtyled a MODE. Nay, if *affirmation* be the *eſſence* of verb, the *infinitive* cannot be conſidered as *any part of the verb at all*; for it expreſſes no affirmation. It is indeed nothing more than an *abſtract noun*, denoting the *ſimple energy* of *the verb*, in conjunction with *time*.
      - VERBS have likewiſe been diſtinguiſhed into the following kinds, according to the nature of the *attribute* of which they are expreſſive.
        - *1ſt*, ACTIVE-TRANSITIVE, or thoſe which denote an action that *paſſes from the agent to* ſome *external object*; as *Cæſar* CONQUERED *Pompey*.
        - *2d*, ACTIVE-INTRANSITIVE, or thoſe which expreſs that kind of action which has *no effect* upon *any thing beyond the agent himſelf*; as, *Cæſar* WALKED.
        - *3d*, PASSIVE, or thoſe which expreſs *not* action but *paſſion*, whether pleaſing or painful; as, *Portia* WAS LOVED, *Pompey* WAS CONQUERED.
        - *4th*, NEUTER, or thoſe which expreſs an attribute that conſiſts neither in *action* nor in *paſſion*; as, *Cæſar* STOOD.
    - PARTICIPLES, or thoſe words which are expreſſive of an ATTRIBUTE combined with TIME. In *Engliſh* there are only two participles: the *preſent*, as WRITING, which expreſſes the *action* of the verb TO WRITE, as *going on*; and the *paſt*, as WRITTEN, which expreſſes the action of the ſame verb as *finiſhed*, and therefore *paſt in time*. In *Greek* and *Latin* there is a *future participle*, by which the attribute is repreſented as *to be* in a ſtate of exertion at ſome future time; as γραψων, *ſcripturus*, "about to write."
    - ADJECTIVES, or thoſe words which expreſs as *inhering in their ſubſtances* the ſeveral QUALITIES of things, *of which the eſſence conſiſts not in motion or its privation*; as, GOOD, BAD, BLACK, WHITE, LARGE, SMALL, *&c.* As *attributes* are the ſame whether they belong to *males* or *females*, to one *object* or to *many*, *adjectives* ought in ſtrictneſs to admit of no variation reſpecting *ſex* or *number*; and in Engliſh they actually admit of none. Some qualities, however, are of ſuch a nature, that one ſubſtance may have them in a *greater degree* than another; and therefore the *adjectives* denoting theſe qualities admit in moſt languages of a *variation*, which grammarians call the *degrees of compariſon*. Thus *Plato was* WISE, *Socrates was* WISER *than he*, but *Solomon* WAS THE WISEST *of men*. There is a ſpecies of *adjectives* derived from *nouns*, and even from *pronouns*: for we ſay, THE POMPEIAN *party*, A BRAZEN *trumpet*, and MY *book*; which are phraſes equivalent to *the party of Pompey*, *a trumpet of braſs*, and *the book of me*.
    - And
    - ADVERBS, or thoſe words which as they denote the ATTRIBUTES OF ATTRIBUTES, have been called ATTRIBUTIVES of the SECOND ORDER; to diſtinguiſh them from VERBS, PARTICIPLES, and ADJECTIVES, which denote the ATTRIBUTES OF SUBSTANCES, and are therefore called ATTRIBUTIVES OF THE FIRST ORDER. ADVERBS are divided into two kinds, *viz.*
      - I. Thoſe that are common to ALL ATTRIBUTIVES of THE FIRST ORDER; *i. e.* which coaleſce equally with VERBS, with PARTICIPLES, and with ADJECTIVES. Theſe may be divided into ADVERBS
        - Of INTENSION and REMISSION, or of QUANTITY CONTINUOUS; as, MODERATELY, VASTLY, EXCEEDINGLY, *&c.* Theſe, like *adjectives* of a ſimilar nature, admit of the different *degrees of compariſon*.
        - Of QUANTITY DISCRETE; as, ONCE, TWICE, THRICE, *&c.* Theſe are not in ſtrictneſs of ſpeech, *adverbs*, being in reality the POSSESSIVE CASES of ONE, TWO, THREE, *&c.*
        - Of RELATION; as, MORE, MOST, LESS, LEAST, EQUALLY, PROPORTIONALLY, *&c.*
      - II. Thoſe that are confined to VERBS properly ſo called, and which are of the following kinds:
        - Of TIME; as, THEN, WHEN, AFTERWARD, NOW, *&c.*
        - Of PLACE; as HERE, THERE, WHERE, HENCE, WHENCE, *&c.* As alſo *adverbs* derived from *prepoſitions*; as, UPWARD, DOWNWARD, *&c.*
        - Of INTENSIONS and REMISSIONS PECULIAR TO MOTION; as, SPEEDILY, HASTILY, SLOWLY, *&c.*—We have given ADVERBS a place among the parts of ſpeech *neceſſary* for the communication of thought; but it may be doubted whether they be intitled to this diſtinction. Engliſh adverbs at leaſt ſeem to be nothing more than a corruptions of *nouns*, *adjectives*, and *verbs*. See Chap. V. ſect. 3.
  - DEFINITIVES; which are all thoſe words that ſerve to DEFINE AND ASCERTAIN ANY PARTICULAR OBJECT OR OBJECTS AS SEPARATED FROM OTHERS OF THE SAME CLASS. Theſe are commonly called
    - ARTICLES; which are divided into two kinds, *viz.*
      - INDEFINITE; as,
        - A or AN, which is prefixed to a *noun* or *general term*, to denote that but ONE INDIVIDUAL is meant of that *genus* or *ſpecies* of which the *noun* is the *common name*. This article, however, leaves the *individual itſelf quite indeterminate*. Thus *man* is the *general name* of the whole human race; A *man* is *one individual*, but that individual is *unknown*.
        - ANY; which is prefixed to a *noun* either in the ſingular or plural number, when it is *indifferent* as to the truth of the propoſition *what individual* or *individuals* be ſuppoſed: Thus, "ANY man will be virtuous when temptation is away."
        - SOME; which is prefixed to *nouns* in the *plural number*, to denote that only PART of the *ſpecies* or *genus* is meant, leaving that part undetermined: Thus, "SOME men are great cowards."
      - And
      - DEFINITE, as,
        - THE; which is prefixed to a *noun*, to denote *one individual of the ſpecies* of which ſomething is predicated that diſtinguiſhes it from *every other* individual: Thus, "THE man that hath not muſic in himſelf is fit for treaſon." It is uſed before nouns in both numbers and for the ſame purpoſe; for we may ſay, "THE MEN who have not muſic in themſelves are fit for treaſons."
        - THIS; which prefixed to a *noun* in the *ſingular* number, denotes *an individual* as PRESENT and NEAR AT HAND; as, "THIS man beſide me."
        - THAT; which prefixed to a *noun* in the *ſingular* number, denotes *an individual* as PRESENT but at a LITTLE DISTANCE; as, "THAT man in the corner."
        - Theſe two articles have *plurals*: THESE is the plural of THIS, and THOSE the plural of THAT.
        - There are many other articles both *definite* and *indefinite*; for which, ſee Chap. II.
  - And
  - CONNECTIVES, or thoſe words which are employed to CONNECT OTHER WORDS AND OF SEVERAL DISTINCT PARTS TO MAKE ONE COMPLETE WHOLE. Theſe may be divided into two kinds, *viz.*
    - CONJUNCTIONS; by which name are diſtinguiſhed all thoſe CONNECTIVES WHICH ARE COMMONLY EMPLOYED TO CONJOIN SENTENCES. Theſe have been divided into two kinds, called
      - CONJUNCTIVES, or thoſe words which *conjoin ſentences* and their *meanings* alſo; and DISJUNCTIVES, or thoſe words which, at the ſame time that they *conjoin ſentences*, *disjoin* their *meanings*. Each of theſe *general diviſions* has been again *ſubdivided*. The *former* into COPULATIVES and CONTINUATIVES, the *latter* into SIMPLE DISJUNCTIVES and ADVERSATIVE DISJUNCTIVES. But the *general diviſion* is abſurd, and the *ſubdiviſions* are uſeleſs. CONJUNCTIONS never *disjoin the meanings of ſentences*, nor have any other effect than to *combine two or more ſimple ſentences into one compound ſentence*. If thoſe ſimple ſentences be of *oppoſite* meanings *before* their combination, they will continue ſo *after* it, whatever conjunction be employed to unite them. In *nature*, DIFFERENT TRUTHS are connected, if they be connected at all, by DIFFERENT RELATIONS, and therefore when the SENTENCES expreſſive of thoſe truths are connected in *language*, it muſt be by words ſignificant of thoſe NATURAL RELATIONS. Thus,
        - ACCIDENTAL ADDITION is expreſſed by the conjunction AND; as when we ſay, "Lyſippus was a ſtatuary AND Priſcian was a grammarian."
        - THE UNEXPECTED JUNCTION OF CONTRARY TRUTHS is expreſſed by BUT; as, "Brutus was a patriot BUT Cæſar was not."
        - THE RELATION OF AN EFFECT TO ITS CAUSE is expreſſed by BECAUSE; as, "Rome was enſlaved BECAUSE Cæſar was ambitious."
        - THE RELATION OF AN EFFECT TO A CAUSE OF WHICH THE EXISTENCE IS DOUBTFUL, by IF; as, "you will live happily IF you live honeſtly."
        - THE RELATION OF A CAUSE TO TO ITS EFFECT, by THEREFORE; as, "Cæſar was ambitious THEREFORE Rome was enſlaved."
        - THE IDEA OF SIMPLE DIVERSITY is expreſſed by EITHER and OR; as, "EITHER it is day OR it is night."
        - CONTRARIETY BETWEEN TWO AFFIRMATIONS, *which though each may be true by* ITSELF, *cannot* BOTH BE TRUE AT ONCE, is expreſſed by UNLESS; as, Troy will be taken UNLESS the Palladium be preſerved."
        - COINCIDENCE OF TWO AFFIRMATIONS APPARENTLY CONTRARY TO EACH OTHER is expreſſed by ALTHOUGH; as, "Troy will be taken ALTHOUGH Hector defend it."
    - And
    - PREPOSITIONS, or thoſe CONNECTIVES of which the COMMON OFFICE IS TO CONJOIN WORDS WHICH REFUSE TO COALESCE; and this they can do only by SIGNIFYING THOSE RELATIONS BY WHICH THE THINGS EXPRESSED BY THE UNITED WORDS ARE CONNECTED IN NATURE. The *firſt* words of men, like their firſt *ideas*, had an immediate reference to *ſenſible* objects; and therefore there can be no doubt but the *original* uſe of PREPOSITIONS was to denote the various relations of *body*. Afterwards when men began to diſcern with their *intellect*, they took thoſe words which they found already made, PREPOSITIONS as well as others, and transferred them by *metaphor* to *intellectual conceptions*. PREPOSITIONS therefore are either
      - PROPER, or thoſe which literally denote the relations ſubſiſting among the objects of ſenſe.
        - THE ACCIDENTAL JUNCTION OF TWO THINGS BETWEEN WHICH THERE IS NO NECESSARY CONNECTION; as, "a houſe WITH a party-wall."
        - THE SEPARATION OF TWO THINGS WHICH WE SHOULD EXPECT TO FIND UNITED; as, "a houſe WITHOUT a roof, and a man WITHOUT hands."
        - THE RELATION SUBSISTING BETWEEN ANY THING AND THAT WHICH SUPPORTS IT; as, "the ſtatue ſtands UPON a pedeſtal."
        - THE RELATIONS OF HIGHER AND LOWER; as, "The ſun is riſen ABOVE the hills:—To ſupport uneaſy ſteps OVER the burning marle:—The ſun is ſet BELOW the horizon:—The ſhepherd reclines UNDER the ſhade of a beach-tree."
        - THE RELATION BETWEEN ANY THING IN MOTION AND THAT IN WHICH IT MOVES; as, "the rays of light paſs THROUGH the air."
        - THE RELATION BETWEEN ANY THING CONTINUED, WHETHER MOTION OR REST, AND THE POINT OF ITS BEGINNING; as, "The rays of light proceed FROM the ſun:—Theſe figs came FROM Turkey:—That lamp hangs FROM the ceiling."
        - THE RELATION BETWEEN ANY THING CONTINUED AND THE POINT TO WHICH IT TENDS; as, "He is going TO Italy—He ſlept TILL morning."
        - THE RELATION BETWEEN AN EFFECT AND ITS CAUSE; as, "I am ſick OF my huſband and FOR my gallant."
      - Or
      - METAPHORICAL. For as thoſe who are above others in *place* have generally the advantage over them, the PREPOSITIONS which denote the one kind of *ſuperiority* or *inferiority*, are likewiſe employed to denote the other. Thus we ſay of a *king*, "he ruled OVER his people; and of a *ſoldier*, "he ſerved UNDER ſuch a general."
    - CONJUNCTIONS and PREPOSITIONS are indeed employed only to connect ſentences and words; but it may be doubted whether they be parts of ſpeech diſtinct from *nouns*, *verbs*, and *adjectives*. See Chap. VI.

INTERJECTIONS are a ſpecies of words which are found perhaps in all the languages on earth, but which cannot be included in any of the claſſes abovementioned; for they are not ſubject to the rules or principles of grammar, as they contribute nothing to the *communication of thought*. They may be called a part of that *natural language* with which man is endowed in common with other animals, to expreſs or ally ſome very *ſtrong ſenſation*; ſuch as, AH! when he feels *pain*. In this view the interjection does not owe its *characteriſtical expreſſion* to the arbitrary *form* of *articulation*, but to the *tone* of voice, and the modifications of *countenance* and of *geſture* with which it is uttered; it is therefore univerſally underſtood by all mankind. In *diſcourſe* INTERJECTIONS are employed only when the ſuddenneſs or vehemence of ſome affection *returns men to their natural ſtate*, and makes them for a moment forget the uſe of ſpeech. In *books* they are thrown into ſentences without altering their form either in ſyntax or in ſignification; and in Engliſh this is generally done with a very bad effect, though the writer no doubt with a view to pathos or embelliſhment.

GRAMMRIAN, one that is ſkilled in or teaches grammar.

Anciently the name *grammarian* was a title of honour, literature, and erudition, being given to perſons accounted learned in any art or faculty whatever. But it is otherwiſe now, being frequently uſed as a term of reproach, to ſignify a dry ploding perſon, employed about words and phraſes, but inattentive to the true beauties of expreſſion and delicacy of ſentiment. The ancient grammarians, called alſo *philologers*, muſt not be confounded with the grammatiſts, whoſe ſole buſineſs was to teach children the firſt elements of language. Varro, Cicero, Meſſala, and even Julius Cæſar, thought it no diſhonour to be ranked as grammarians, who had many privileges granted to them by the Roman emperors.

GRAMONT, a town of France, in the Limoſine remarkable for its abbey, which is the chief of the order. E. Long. 133. N. Lat 45. 56.

GRAMPIAN-HILLS; a chain of high mountains in Scotland, which run from eaſt to weſt almoſt the whole breadth of the kingdom. See *(Scottiſh)* ALPS and SCOTLAND.—They take their name from only a ſingle hill, the *Mons Grampius* of Tacitus, where Galgacus waited the approach of Agricola, and where the battle was fought ſo fatal to the brave Caledonians.

GRAMPOUND, a town of Cornwall in England, ſeated on the river Valle, over which there is here a bridge. W. Long. 5. 25. N. Lat. 50. 20. The inhabitants have a conſiderable manufacture of gloves; and the town ſends two members to parliament. Some think that this town is the Voluba of the ancients becauſe it ſtands on the ſame river; and that on the building of the bridge, the name was changed into Grandpont. It was made a borough in the reign of Edward III. by whoſe charter it was endowed with large privileges, particularly freedom from toll through all Cornwall, a market on Saturday, and three fairs in the year; which the burgeſſes hold of the duchy of Cornwall in fee-farm, at the rent of about 12 guineas. Its privileges were confirmed by King Henry VIII. but it did not ſend members to parliament till the reign of Edward VI. It is a corporation with a mayor, 8 magiſtrates, a recorder, and town-clerk. The mayor is choſen anually the Tueſday before Michaelmas, and the members by the majority of the magiſtrates and freemen, who are ſuch of the inhabitants as pay ſcot and lot. There is a chapel of eaſe in the town to the pariſh-church, which is at Creed, about a quarter of a mile off.

GRAMPUS, in ichthyology; a ſpecies of delphinus. See DELPHINUS,

GRANADA, a province of Spain, which for a long time was a kingdom diſtinct from the reſt of that country. See the article SPAIN.—It made a part of the ancient Bætica; and was inhabited by the Baſtuli, the Sexitani, &c. At preſent it is ſometimes called Upper Andaluſia. It is bounded to the ſouth and eaſt by the Mediterranean, to the weſt and north by Lower Andaluſia, and to the north-eaſt by Murcia. Its extent from weſt to eaſt is two hundred and ten miles; but its greateſt breadth exceeds not eighty. The air here is temperate and healthy; and though there are many mountains in the province, and ſome of them very high, yet they are almoſt every where covered with vines and fruit-trees, together with laurel, myrtle, ſweet-baſil, thyme, lavender, marjoram, and other aromatic herbs, which give an exquiſite taſte to the fleſh of their ſheep and cattle. A great deal of ſilk and ſugar, flax and hemp, honey and wax is alſo produced here; beſides dates and acorns, ſuperior to the fineſt nuts; good ſtone for building; ſeveral ſorts of gems; ſumach, uſed in dreſſing goatſkins; and galls, of which a dye is made for leather. The valleys, with which the mountains are interſperſed, are extremely beautiful and fertile. The inhabitants of ſome of the higheſt mountains are ſaid to be deſcendants of the Moors; and, though they are become Roman-catholics, retain, in a great meaſure, their ancient cuſtoms, manners, and language. The principal rivers in the province are the Genil, or Xenil, and Gaudalantin, beſides which there are many leſſer ſtreams. Abundance of ſalt is made in this province; which, though neither ſo populous nor ſo well cultivated as when ſubject to the Moors, yet is as much ſo as any in Spain. It was the laſt of the kingdom poſſeſſed by the Moors, and was not reduced and annexed to the crown of Caſtile until 1492.

GRANADA, the capital of the above province, is ſituated at the foot of the Siérra Nevada, or the Snowy Mountain, in a wholeſome air and fruitful country, an hundred and eighty miles ſouth of Madrid, in W. Long. 2. 30. N. Lat. 36. 56. It ſtands upon two hills ſeparated by the Darro. The Genil runs under the walls, and theſe two rivers are formed from the melting of the ſnow with which the mountain is conſtantly covered. The Darro is ſaid to carry with it ſmall particles of gold; and its name, derived from *dat aurum*, may be alleged as a proof of this: the Genil, in like manner, rolls with its ſtream little pieces of ſilver. When Charles V. came to Granada, in 1526, with the empreſs Iſabella, the city preſented him with a crown made of gold gathered from the Darro. The city is large and magnificent, containing a great number of very handſome public and private buildings. Its walls, which are adorned with many towers at equal diſtances, are ſaid to be ten miles in compaſs. Here are two caſtles; the one built by the Moors, and the other by Charles V. and Philip II. They both command a very fine proſpect; and the firſt is ſo large, that it looks like a city by itſelf, and, it is ſaid, has room enough to accommodate forty thouſand people, excluſive of the royal palace, and the convent of St Francis. Here is alſo a court of inquiſition; a royal tribunal; and an univerſity, founded in 1531; with the ſee of an archbiſhop, who has a revenne of forty thouſand ducats per annum. A great many noblemen, clergymen, and wealthy citizens, reſide in this city, of which the ſilk trade and manufacture is very great, and the arſenal is ſaid to be the beſt furniſhed of any in Spain. The inhabitants, who are partly deſcended of the Moors, are well ſupplied with water. There are ſeveral fine ſquares, particularly that called the Bivaramba or Plaça Mayor, where the bull-fights are held; and without the city is a large plain, full of towns and villages, called La Vega de Granada.

The Moors are ſaid to regret nothing but Granada, amongſt all the loſſes they have ſuſtained in Spain; they mention it in all their evening prayers, and ſupplicate heaven to reſtore it to their poſſeſſion. The laſt Mooriſh ambaſſador who came into Spain obtained permiſſion of the king to ſee Granada; he ſhed tears on entering the Alhambra, and could not refrain from exclaiming, that the folly of his anceſtors had deprived them and their poſterity of that delightful country.

Granada had formerly twenty gates: the firſt, that of Elvira, which ſtill remains; the ſecond, that of Bibalmazar, or of conference, becauſe, with the Moors, it was a kind of place of reſort where they converſed on affairs; the third, Vivarambla, ſo called from its leading to a grand ſquare which ſtill bears the ſame name; the fourth, Bib Racha, or of proviſions; the fifth, Bitataubin, or the gate of the hermits, which led to different ſolitudes, the abodes of derviſes; the ſixth, Bibmitre, or Biblacha, the firſt gate; the ſeventh, the mill gate; the eighth, that of the ſun, becauſe it opened to the eaſt: the ninth, the gate of the Alhambra, called by the Moors Bib Luxar; the tenth, Bib Adam, or the gate of the bones of Adam; the twelfth, Bib Ciedra, the gate of the nobles; the Moors kept this gate ſhut for a long time, becauſe it had been predicted that the enemies which ſhould one day take the city, would enter by that gate; the thirteenth, is that of Faxalauza, or of the hill of almond trees; the fourteenth, the lion gate, in Arabic, Bib Elecei; the fifteenth, the coaſt gate, called by the Moors Alacabar; the ſixteenth, Bib Albonut, or the gate of the Banners, at preſent the magdalen gate; the ſeventeenth, that of the Darro; the eighteenth, that of the Moſayca; the nineteenth, that called the gate of *Ecce Homo*; the twentieth, that by the ſide of the Alhambra.

The Moors have left more monuments in Granada than in any other city in Spain. From the great number of inſcriptions in and about the city, and the fine edifices of the Alhambra and the Generalif, it might be ſuppoſed theſe people intended to Make Granada the great depoſitory of their religion, manners, cuſtoms, and magnificence. There is not a wall which does not bear ſome marks of their power; but, notwithſtanding this abundance of monuments, the reign of the Moors in Spain is ſtill buried in confuſion and obſcurity. The ignorance of the Spaniards, their ſuperſtition, and the hatred they bore the Moors, have much contributed to this darkneſs; they have either deſtroyed, or ſuffered to be effaced by time, every thing which bore the mark of mahometaniſm, inſtead of preſerving the monuments of antiquity, which at the ſame time were thoſe of their own glory; and it may be ſaid, that chance alone, and the ſolidity of their conſtruction, much more than curioſity or a love of the arts, has preſerved thoſe which ſtill exiſt, although daily going to ruin.

An account of the ALHAMBRA has been already given under its name in the order of the alphabet. From the hall of *Comares* there mentioned, there is a modern little ſtair-caſe; the old one, which correſponded to the beauty of the edifice, having been deſtroyed. At the top of the ſtair-caſe is a gallery, a part of which is incloſed with an iron railing; this kind of cage is called the priſon of the queen. It was here the wife of the laſt king of Granada was impriſoned. The Gomels and Legris, two families of diſtinction, bore falſe witneſs againſt her virtue, and occaſioned the deſtruction of the greateſt part of the Abencerrages, another powerful and numerous family of Granada of whom they were jealous. The hiſtory of this event is given as follows.

In the year 1491, Abdali, ſurnamed the Little, ſtill reigned in Granada; but this city was upon the brink of ruin, for the principal families were divided againſt each other. The Moors had carried their arms againſt Jaen, and had been bravely repulſed. Abdali was conſoling himſelf in one of his pleaſure houſes for the ill ſucceſs of his enterpriſe, when the Zegris, who long had been the ſecret enemies of the Abencerrages, took the opportunity of this defeat to repreſent them to the king as rebellious ſubjects, who employed their immenſe riches to gain the favour of the people and dethrone their ſovereigns. They accuſed Albin Hamet the moſt rich and powerful among them, of having an adulterous commerce with the queen, and produced witneſſes who aſſerted they had on a certain feſtival ſeen, at Generalif, under a bower of roſe trees, Albin Hamet in the arms of that princeſs. The fury of Abdali may eaſily be imagined; he ſwore the deſtruction of the Abencerrages. But the Zegris, too prudent to let his anger break forth, adviſed him to diſſimulate, and not to ſuffer it to be known to that numerous and powerful family that he was informed of their perfidy. It will be better, ſaid they, to entice them into the ſnare, and, before they can unite and put themſelves into a ſtate of defence, revenge upon their heads the inſult offered to the crown. This advice was followed: Abdali went to the Alhambra, having ordered thirty of his guards to arm themſelves, and the executioner to attend. The Abencerrages were ſent for one by one, and beheaded as ſoon as they entered the hall of the lions, where there is ſtill a large vaſe of alabaſter, which was quickly filled with blood and the heads of expiring bodies. Thirty-five heads had already been ſtruck off, and all the Abencerrages would have died in the ſame manner, had not a page, who had followed his maſter, and remained unperceived in the hurry of the execution, taken an opportunity of withdrawing and giving information to the reſt of the unhappy family of what had paſſed. Theſe immediately aſſembled their friends in arms, crying out through the city of Granada, "Treaſon! treaſon! Let the king die! he unjuſtly puts to death the Abencerrages!" The people, with whom they were favourites, did not heſitate in aſſiſting them: fourteen thouſand men were ſoon found in arms, and immediately proceeded towards the Alhambra, ſhouting all the way, Let the king die! Abdali, ſurpriſed his ſecret ſhould have been ſo ſoon diſcovered, and ſeverely repenting of having followed the pernicious counſels he had received, ordered the caſtle gates to be ſhut; but they were preſently ſet on fire. Muley Hacen, who had been forced to abdicate the throne in favour of his ſon, hearing the tumult of the people, had one gate opened, and preſented himſelf to appeaſe the rage of the citizens; but he no ſooner appeared, than he was lifted up by the multitude neareſt the gate, who cried out "Behold our king, we will have no other, long live Muley Hacen;" and leaving him ſurrounded by a ſtrong guard, the Abencerrages, and other nobles, entered the caſtle, accompanied by upwards of an hundred ſoldiers. But they found the queen only, with her women, and in the utmoſt conſternation at the ſudden revolution, of which ſhe knew not the cauſe. They aſked for the king; and being informed he was in the hall of the lions, entered it furiouſly, and found him defended by the Zegris and the Gomels, and in leſs than two hours killed upwards of two hundred of them. Abdali had the good fortune to eſcape. The bodies of the beheaded Abencerrages were laid upon black cloth, and carried to the city. Muza, brother to Abdali, and who by his great actions had gained the favour of the people, ſeeing the Abencerrages were revenged, found means to appeaſe them; and having learned that the king had taken refuge in a moſque near the mountain now called Saint Helena, went and brought him back to the caſtle of the Alhambra. For ſeveral days nothing but ſighs and groans were heard throughout the city. Abdali ſhut himſelf up in the caſtle, and refuſed to ſee the queen. Thoſe who had accuſed her of adultery, however, perſiſted in their falſe accuſation, and ſaid, they would maintain, with arms in their hands, againſt all who ſhould contradict them, that the queen was guilty. The unhappy princeſs was impriſoned, and the day arriving on which ſhe was to periſh by the hands of the executioner, when none among the Moors offering to defend her, ſhe was adviſed to commit her cauſe to ſome Chriſtian knights, who preſented themſelves at the time appointed, and conquered her falſe accuſers, ſo that ſhe was immediately ſet at liberty. The taking of Granada ſoon followed this combat; Muza and the Abencerrages having, it is ſaid, facilitated the conqueſt of it by Ferdinand and Iſabella.

From the Alhambra you enter the Generalif by a low gate, which favoured the eſcape of Abdali when Ferdinand took Granada. Generalif is ſaid to ſignify, in Arabic, the houſe of love, of dance, of pleaſure. It was built by a prince of the name of Omar, who was ſo fond of muſic, that he retired to this palace, entirely to give himſelf up to that amuſement. The Generalif is the moſt pleaſing ſituation in the environs of Granada. It is built upon a very high mountain whence waters ruſh from every ſide, which eſcape in torrents, and fall in beautiful caſcades in the courts, gardens, and halls of that ancient palace. The gardens form an amphitheatre, and are full of trees, venerable from their antiquity. Two cypreſſes in particular are noted, called the Cypreſſes of the queen, becauſe it was near them the perfidious Gomel impeached the virtue of that princeſs and the honour of the Abencerrages. Of this place, travellers obſerve, that the writers of romances have never imagined a ſcene equal to it.

Granada was formerly called *Illiberia*, and founded, if we will believe ſome writers, by Liberia, a great grand-daughter of Hercules, daughter of Hiſpan, and wife to Heſperus, a Grecian prince, and brother to Atalanta. Others, who ſupport their aſſertions by proofs to the full as ſatisfactory, maintain that it was founded by Iberus, grandſon of Tubal, and that it took the name of Granada, or Garnata, from Nata the daughter of Liberia; this word being compoſed of *Gar* (which in the language of the time ſignified grotto) and *Nata*; that is, "the grotto of Nata," becauſe that princeſs ſtudied aſtrology and natural hiſtory, and delighted in the country. It is certain that ſuch a perſon as Nata, or Natayde, exiſted in the firſt ages of the foundation of Granada; and that in the place where the Alhambra now ſtands, there was a temple dedicated to Nativala. The date of the foundation of Granada is ſaid to be 2808 years before Chriſt. We know that in the time of the Romans it was a municipal colony.—A deſcription in Latin of Granada, ſuch as it was, in 1560, written by a merchant at Antwerp, named George Hoſnahel, who travelled into Spain, is to be found in the work, intitled *Civitates orbis terrarum*, printed at Cologne in 1576. This book alſo contains a good plan of the city of Granada.

GRANADA, or *GRENADA*, one of the Caribbee iſlands. See **GRENADA**.

GRANADA, a town of America, in the province of Nicaragua, and in the audience of Guatimala, ſeated on the lake Nicaragua, 70 miles from the S. Sea. It was taken twice by the French buccaneers, and pillaged. The inhabitants carry on a great trade by means of the lake, which communicates with the N. Sea. W. Long. 85. 10. N. Lat. 11. 8.

GRANADA, *New*, a province of South America, in Terra Firma, about 75 miles in length, and as much in breadth. It is bounded on the north by Carthagena and St Martha, on the eaſt by Venezuela, on the ſouth by Popayan, and on the weſt by Darien. It contains mines of gold, copper, and iron; horſes, mules, good paſtures, corn, and fruits. It belongs to the Spaniards, and Santa-Fe-de-Bagota is the capital town.

GRANADILLOES, the name of ſome iſlands of the Caribbees, in America, having St Vincent to the north and Granada to the ſouth. They are ſo inconſiderable that they are quite neglected; but were ceded to England by the treaty of peace in 1763.

GRANADIER, a ſoldier armed with a ſword, a firelock, a bayonet, and a pouch full of hand-granadoes. They wear high caps, are generally the talleſt and briſkeſt fellows, and are always the firſt upon all attacks.

Every battalion of foot has generally a company of granadiers belonging to it; or elſe four or five granadiers belong to each company of the battalion, which, on occaſion, are drawn out, and form a company of themſelves. Theſe always take the right of the battalion.

GRANADO or **GRENADE**, in the art of war, a hollow ball or ſhell of iron or other metal, of about $2\frac{1}{2}$ inches diameter, which being filled with fine powder, is ſet on fire by means of a ſmall fuſe driven into the fuſe-hole, made of well-ſeaſoned beech-wood, and thrown by the grenadiers into thoſe places where the men ſtand thick, particularly into the trenches and other lodgements made by the enemy. As ſoon as the compoſition within the fuſe gets to the powder in the grenado, it burſts into many pieces, greatly to the damage of all who happen to be in its way. Granadoes were invented about the year 1594. The author of the Military Dictionary has the following remark on the uſe of granadoes. "Grenades have unaccountably ſunk into diſuſe; but I am perſuaded there is nothing more proper than to have grenades to throw among the enemy who have jumped into the ditch. During the ſiege of Caſſel under the Count de La Lippe, in the campaign of 1762, a young engineer un-

undertook to carry one of the outworks with a much ſmaller detachment than one which had been repulſed, and ſucceeded with eaſe from the uſe of grenades; which is a proof that they ſhould not be neglected, either in the attack or defence of poſts."—The word Granado takes its riſe from hence, that the ſhell is filled with grains of powder, as a pomegranate is with kernels.

GRANARD, a borough, market, fair, and poſt town in the county of Longford, province of Leinſter; it gives title of earl to the family of Forbes; ſituated 52 miles from Dublin, and about 16 north eaſt of Longford. N. Lat. 53. 44. W. Long. 7. 30. Here is a remarkable hill or mount, called the *Moat of Granard*, thought to be artificial, and a ſite of a Daniſh caſtle or fort; which commands from its ſummit a moſt extenſive proſpect into ſix or ſeven adjoining counties. In this town have lately been given annual prizes to the beſt performers on the Iriſh harp. Granard has a barrack for a company of foot; and returns two members to parliament; patronage in the families of Macartney and Greville. Fairs held 3d May and 1ſt October. This place takes its name from *Grianard*, or "the height of the ſun," and was formerly the reſidence of the chiefs of north Teſfia. It is ſometimes written Grenard.

GRANARY, a building to lay or ſtore corn in, eſpecially that deſigned to be kept a conſiderable time.

Sir Henry Wotton adviſes to make it look towards the north, becauſe that quarter is the cooleſt and moſt temperate. Mr Worlidge obſerves, that the beſt granaries are built of brick, with quarters of timber wrought in the inſide, to which the boards may be nailed, with which the inſide of the granary muſt be lined ſo cloſe to the bricks, that there may not be any room left for vermin to ſhelter themſelves. There may be many ſtories one above another, which ſhould be near the one to the other; becauſe the ſhallower the corn lies, it is the better, and more eaſily turned.

The two great cautions to be obſerved in the erecting of granaries are, to make them ſufficiently ſtrong, and to expoſe them to the moſt drying winds. The ordering of the corn in many parts of England, particularly in Kent, is thus: To ſeparate it from duſt and other impurities after it is thraſhed, they toſs it with ſhovels from one end to the other of a long and large room; the lighter ſubſtances fall down in the middle of the room, and the corn only is carried from ſide to ſide, or end to end of it. After this they ſcreen the corn, and then bringing it into the granaries, it is ſpread about half a foot thick, and turned from time to time about twice in a week; once a week they alſo repeat the ſcreening it. This ſort of management they continue about two months, and after that they lay it a foot thick for two months more; and in this time they turn it once a week, or twice if the ſeaſon be damp, and now and then ſcreen it again. After about five or ſix months they raiſe it to two feet thickneſs in the heaps, and then they turn it once or twice in a month, and ſcreen it now and then. After a year, they lay it two and a half or three feet deep, and turn it once in three weeks or a month, and ſcreen it proportionably. When it has lain two years or more, they turn it once in two months, and ſcreen it once a quarter; and how long ſoever it is kept, the oftener the turning and ſcreening is repeated, the better the grain will be found to keep.—It is proper to leave an area of a yard wide on every ſide of the heap of corn, and other empty ſpaces, into which they turn and toſs the corn as often as they find occaſion. In Kent they make two ſquare holes at each end of the floor, and one round in the middle, by means of which they throw the corn out of the upper into the lower rooms, and ſo up again, to turn and air it the better. Their ſcreens are made with two partitions, to ſeparate the duſt from the corn, which falls into a bag, and when ſufficiently full this is thrown away, the pure and good corn remaining behind. Corn has by theſe means been kept in granaries 30 years; and it is obſerved, that the longer it is kept the more flower it yields in proportion to the corn, and the purer and whiter the bread is, the ſuperfluous humidity only evaporating in the keeping. At Zurich in Swiſſerland, they keep corn 80 years, or longer, by the ſame ſort of methods.

The public granaries at Dantzick are ſeven, eight, or nine ſtories high, having a funnel in the midſt of every floor to let down the corn from one to another. They are built ſo ſecurely, that though every way ſurrounded with water the corn contracts no damp, and the veſſels have the convenience of coming up to the walls for their lading. The Ruſſians preſerve their corn in ſubterranean granaries of the figure of a ſugar-loaf, wide below and narrow at top: the ſides are well plaſtered, and the top covered with ſtones. They are very careful to have the corn well dried before it is laid into theſe ſtorehouſes, and often dry it by means of ovens; the ſummer dry weather being too ſhort to effect it ſufficiently.—Dantzick is the grand ſtorehouſe or repoſitory of all the fruitful kingdom of Poland. The wheat, barley, and rye, of a great part of the country, are there laid up in parcels of 20, 30, or 60 laſts in a chamber, according to the ſize of the room; and this they keep turning every day or two, to keep it ſweet and fit for ſhipping. A thunder ſtorm has ſometimes been of very terrible conſequences to theſe ſtores. All the corn of the growth of former years having been found ſo much altered by one night's thunder, that though over night it was dry, fit for ſhipping or keeping, and proper for uſes of any ſort, yet in the morning it was found clammy and ſticking. In this caſe there is no remedy but the turning of all ſuch corn three or four times a day for two months or longer; in which time it will ſometimes come to itſelf, though ſometimes not. This effect of thunder and lightning is only obſerved to take place in ſuch corn as is not a year old, or has not ſweated thoroughly in the ſtraw before it was threſhed out. The latter inconvenience is eaſily prevented by a timely care; but as to the former, all that can be done is carefully to examine all ſtores of the laſt year's corn after every thunder ſtorm, that if any of this have been ſo affected, it may be cured in time; for a neglect of turning will certainly utterly deſtroy it.

According to Vitruvius's rules, a granary ſhould always be at the top of a houſe, and have its openings only to the north or eaſt, that the corn may not be expoſed to the damp winds from the ſouth and weſt, which are very deſtructive to it; whereas the contrary ones are very neceſſary and wholeſome to it, ſerving to cool and dry it from all external humidity, from whatever cauſe. There muſt alſo be openings in the roof to be ſet open in dry weather, partly to let in freſh air, and partly to let out the warm effluvia which are often emitted by the corn. The covering of the roofs ſhould always be of tiles, becauſe in the worſt ſeaſons, when the other openings cannot be ſafe, there will always be a conſiderable inlet for freſh air, and a way out for the vapours by their joinings, which are never cloſe. If there happen to be any windows to the ſouth, great care muſt be taken to ſhut them up in moiſt weather, and in the time of the hot ſouthern winds. There muſt never be a cellar, or any other damp place under a granary, nor ſhould it ever be built over ſtables; for in either of theſe caſes the corn will certainly ſuffer by the vapours and be made damp in one, and ill-taſted in the other.

M. Du Hamel and Dr Hales recommend various contrivances for ventilating or blowing freſh air through corn laid up in granaries or ſhips, in order to preſerve it ſweet and dry, and to prevent its being devoured by weevils or other inſects. This may be done by nailing wooden bars or laths on the floor of the granary about an inch diſtant from each other, when they are covered with hair-cloth only; or at the diſtance of two or three inches, when coarſe wire-work, or baſket-work of oſier is laid under the hair-cloth, or when an iron plate full of holes is laid upon them. Theſe laths may be laid acroſs other laths, nailed at the diſtance of 15 inches, and two or more deep, that there may be a free paſſage for the air under them. The under laths muſt come about ſix inches ſhort of the wall of the granary at one end of them; on which end a board is to be ſet edgeways, and ſloping againſt the wall: by this diſpoſition a large air-pipe is formed. which having an open communication with all the interſtices between and under the bars, will admit the paſſage of air below forcibly through a hole at the extremity of it, into all the corn in the granary, that will conſequently carry off the moiſt exhalations of the corn. The ventilators for ſupplying freſh air may be fixed againſt the wall, on the inſide or outſide of the granary, or under the floor, or in the cieling; but wherever they are fixed, the handle of the lever that works them muſt be out of the granary, otherwiſe the perſon who works them would be in danger of ſuffocation, when the corn is fumed with burning brimſtone, as is ſometimes done for deſtroying weevils. Small moveable ventilators will anſwer the purpoſe for ventilating corn in large bins in granaries, and may be eaſily moved from one bin to another. If the granary or corn ſhip be very long, the main air-pipe may paſs lengthwiſe along the middle of it, and convey air, on both ſides, under the corn. In large granaries, large double ventilators, laid on each other, may be fixed at the middle and near the top of the granary, that they may be worked by a wind-mill fixed on the roof of the building, or by a water-mill. The air is to be conveyed from the ventilators through a large trunk or trunks, reaching down through the ſeveral floors to the bottom of the granary, with branching trunks to each floor, by means of which the air may be made to paſs into a large trunk along the adjoining croſs walls: from theſe trunks ſeveral leſſer trunks, about four inches wide, are to branch off, at the diſtance of three or four feet from each other, which are to reach through the whole length of the granary, and their farther ends are to be cloſed: ſeams of $\frac{1}{10}$ or $\frac{1}{12}$ of an inch are to be left open at the four joinings of the boards, where they are nailed together, that the air may paſs through them into the corn. In ſome of theſe leſſer trunks there may be ſliding ſhutters, in order to ſtop the paſſage of the air through thoſe trunks which are not covered with corn; or to ventilate one part of the granary more briſkly than others, as there may be occaſion. There muſt alſo be wooden ſhutters, hung on hinges at their upper part, ſo as to ſhut cloſe of themſelves; theſe muſt be fixed to the openings in the walls of the granary on their outſide: by theſe means they will readily open to give a free paſſage for the ventilating air, which aſcends through the corn, to paſs off, but will inſtantly ſhut when the ventilation ceaſes, and thereby prevent any dampneſs of the external air from entering: to prevent this, the ventilation ſhould be made only in the middle of dry days, unleſs the corn, when firſt put in, is cold and damp.

In leſſer granaries, where the ventilators muſt be worked by hand, if theſe granaries ſtand on ſtaddles, ſo as to have their loweſt floor at ſome diſtance from the ground, the ventilators may be fixed under the loweſt floor, between the ſtaddles, ſo as to be worked by men ſtanding on the ground, without or within the granary. A very commodious and cheap ventilator may be made for ſmall granaries, by making a ventilator of the door of the granary; which may be eaſily done by making a circular ſcreen, of the ſize of a quarter of a circle, behind the door: but in order to this, the door muſt be open, not inwards but outwards of the granary, ſo that as it falls back, it may be worked to and fro in the ſcreen; which muſt be exactly adapted to it in all parts of the circular ſide of the ſcreen as well as at the top and bottom. But there muſt be a ſtop at about eight or ten inches diſtance from the wall, to prevent the door's falling back farther; that there may be room for a valve in the ſcreen to ſupply it with air; which air will be driven in by the door, through a hole made in the wall near the floor, into the main air-trunk, in which there muſt be another valve over the hole in the wall, to prevent the return of the air.

To deſtroy weevils and other inſects with which GRANARIES *are apt to be infeſted.*—The preſervation of grain from the ravages of inſects may be beſt effected by timely and frequent ſcreening, and ventilation; as little or no inconvenience will follow corn or malt lodged dry, but what evidently reſults from a neglect of theſe precautions. For, whether the obvious damage ariſe from the weevil, the moth, or the beetle, that damage has ceaſed at the time the vermin make their appearance under either of theſe ſpecies, they being, when in this laſt ſtate of exiſtence, only propagators of their reſpective kinds of vermiculi; which, while they continue in that form, do the miſchief.

In this laſt, or inſect ſtate, they eat little, their principal buſineſs being to depoſit their *ova* (egg), which unerring inſtinct prompts them to do where large collections of grain furniſh food for their ſucceſſors while in a vermicular ſtate. It is therefore the buſineſs of induſtry to prevent future generations of theſe ravagers, by deſtroying the eggs previous to their hatching; and this is beſt accompliſhed by frequent ſcreening, and expoſure to draughts of wind or freſh air. By frequently ſtirring the grain, the coheſion of their ova is broken, and the nidus of thoſe minute worms is deſtroyed, which on hatching collect together, and ſpin or weave numerous neſts of a cobweb-like ſubſtance for their ſecurity. To theſe neſts they attach, by an infinity of ſmall threads, many grains of corn together, firſt for their protection, and then for their food. When their habitations are broken and ſeparated by the ſcreen, they fall through its ſmall interſtices, and may be eaſily removed from the granary with the duſt. Thoſe that eſcape an early ſcreening will be deſtroyed by ſubſequent ones, while the grain is but little injured; and the corn will acquire thereby a ſuperior purity. But by inattention to this, and ſometimes by receiving grain already infected into the granary, theſe vermin, particularly the weevil, will in a ſhort time ſpread themſelves in that ſtate every where upon its ſurface, and darken even the walls by their number. Under ſuch circumſtances a hen or hens, with new hatched chickens, if turned on the heap, will traverſe, without feeding (or very ſparingly ſo) on the corn, wherever they ſpread; and are ſeemingly inſatiable in the purſuit of theſe inſects. When the number is reduced within reach, a hen will fly up againſt the walls, and bruſh them down with her wings, while her chickens ſeize them with the greateſt avidity. This being repeated as often as they want food, the whole ſpecies will in a day or two be deſtroyed. Of the phalæna (moth), and the ſmall beetle, they ſeem equally voracious: on which account they may be deemed the moſt uſeful inſtruments in nature for eradicating theſe noxious and deſtructive vermin.

GRANATE, or GARNET: a genus of foſſils ranked among the ſiliceous earths; but, according to M. Magellan, analogous to gems, all of them being compoſed of the ſiliceous, argillaceous, and calcareous earths, with a greater or leſs proportion of iron. The opaque and black garnets contain about a fifth part of iron; but the diaphanous ones only $\frac{1}{50}$th, according to Bergman. The garnets, properly ſo called, contain a greater quantity of ſiliceous earth than the ſhirls, and both are now juſtly ranked with the ſiliceous earths. The general properties of the garnet, according to Cronſtedt, are as follow: 1. It is more fuſible as it contains leſs metallic matter, and is more tranſparent or glaſſy in its texture. 2. Mixed with ſalt of kelp, it may, on a piece of charcoal, be converted into glaſs by the blow-pipe, which cannot be done with a flint. 3. The moſt tranſparent garnet may, without any addition, be brought to a black opaque ſlag by the ſame means. 4. It is never, as far as is hitherto known, found pure, or without ſome mixture of metal, eſpecially iron, which may be extracted by the common methods. 5. The garnet matter, during the cryſtallization, has either been formed in ſmall detached quantities, or elſe has had the power of ſhooting into cryſtals, though cloſely confined in different ſubſtances: ſince garnets are generally found diſperſed in other ſolid ſtones, and oftentimes in the harder ones, ſuch as quartz and chert. Fabroni informs us, that the garnet is eaſily melted by means of borax or the vegetable alkali. Its ſpecific gravity is greater than that of the precious ſtones; viz. from 3600, and even from 4400 to 5000. According to Brunich, moſt of the garnets ſtrike fire with ſteel.

Cronſtedt obſerves, that the metallic calces, when mixed with other earthy ſubſtances, make great alteration in their fuſibility; iron, for inſtance, in the argillaceous and micaceous earths, renders them fuſible, tho' otherwiſe they are not ſo. Hence there may be ſome reaſons for conſidering the garnet as a quartz impregnated with iron; yet on the whole he thinks it will be better to call the garnet a ſtone of a different order, until we have experiments ſufficient to warrant us to reduce the number of earths. The garnet earth is never found but in an indurated ſtate; and is divided into the garnet properly ſo called, and ſhirl or cockle; though this perhaps is owing more to the figure of their cryſtals than any thing elſe. The ſpecies are,

1. The granatus, or coarſe-grained garnet; a heavy hard ſtone, cryſtallizing in form of polygonal balls, moſtly of a red or reddiſh brown colour. It is found of a reddiſh brown and whitiſh or pale yellow, in different parts of Sweden.

2. The granatus cryſtallizatus, or cryſtallized garnet, is reckoned among the precious ſtones, but varying in its colour and form of its cryſtal more than any of them. Sometimes it is of a deep and dark red colour; ſometimes, yellowiſh or purpliſh; ſometimes brown, black, or opaque. It is inferior both in luſtre and hardneſs to the other gems, yielding to the file, although it will ſtrike fire with ſteel. The cryſtals are ſometimes irregular, but frequently aſſume rhomboidal, tetradecahedral, and almoſt all other regular forms.

Wallerius makes the ſpecific gravity of the garnet from 3600 to 3900, and even 4400; Briſſen makes it 4100; and Cotes ſays that the garnets of Bohemia are 4360, thoſe of Sweden being 3978. The moſt eſteemed is the Syrian garnet; which is of a fine red, inclining to purple, very tranſparent, but leſs beautiful than the oriental amethyſt. This, according to Magellan, is the amethyſtizontas of Pliny; and is found in Syria, Calcutta, Cananor, Camboya, and Ethiopia. The ſoranus of the ancients was another kind of garnet of a red colour inclining to yellow, called *vermeille* by the French, and *giacinto guarnacino* by the Italians; the former having the name of *rubino di rocca* among the laſt mentioned people. The name *Soranus* comes from Sorian or *Surian*, a town of Pegu, from whence theſe gems are brought.

Sometimes the garnets have a yellow colour, in which caſe they obtain the name of *hyacinths*. Like other gems, they are divided into oriental and occidental; but this means in fact no more than *more* or *leſs* valuable; the fineſt ſtones being always called *oriental*, wherever they come from. Some very fine ones are found in Bohemia; they are alſo met with in Hungary, at Pyrna in Sileſia, S. Sapho in the canton of Berne in Switzerland, in Spain, and in Norway. Their colour is ſuppoſed to proceed from iron; and, according to M. Sauſſure, even the fineſt oriental garnets attract the magnetic needle at a ſmall diſtance. In the focus of a good burning-glaſs the garnet melts into a brown maſs, which is attracted by the magnet; which ſhows that iron enters into its compoſition in a conſiderable proportion. Some garnets, however, contain a little gold; and ſome, called by the Germans *zingraupen*, contain tin. M. Magellan is of opinion, that the *lapis alabandicus* of Pliny, and another gem which he mentions of a deep purple, were both true garnets.

3. The cockle or ſhirl. See Cockle.

The garnets abound ſo much with iron that they are ſometimes worked with profit as ores of that metal; in which caſe no notice is taken of the natural character of the ſtone, in the ſame manner as is done with clays and jaſpers that contain iron; for in theſe the quantity of metal is gradually augmented, until at laſt they acquire the appearance of iron itſelf. The greateſt part of this genus, however, contain only from ſix to twelve *per cent.* of iron, which is too poor to be worked any where with advantage as an ore of that metal. When any of the garnet kind are to be tried for the metal they contain, the iron ought to be melted out of them by the common proceſs; and if the garnet at the ſame time contains tin or lead, thoſe will likewiſe be included in the iron. They may be extracted out of it, however, by a heat gradually augmented; the lead and tin ſweating out in form of drops, though always ſomewhat mixed with iron. None of the garnet kind have yet been found in the form of an earth properly ſo called; though at Swappawari in Lapland, there is found a bole which has the ſame figure with the garnet; and the horneblende of the Swedes, which is ſomewhat harder than this bole, has often the appearance of a cockle.

Granate-Paſte. See Garnet.

GRAND, a term rather French than Engliſh, tho' uſed on many occaſions in our language. It has the ſame import with *great*, being formed of the Latin *grandis*. In this ſenſe we ſay, the grand-maſter of an order, the grand-maſter of Malta, of the free-maſons, &c. So alſo the grand-ſignor, the grand-viſir, &c. grand-father, grand-mother, &c.

In the French polity and cuſtoms there are ſeveral officers thus denominated, which we frequently retain in Engliſh; as grand almoner, grand ecuyer, grand chambellan, grand voyer, &c.

Grand-Aſſize. See Assise.

Grand Diſtreſs (*diſtrictio magna*), in Engliſh law, a writ of diſtreſs, ſo called on account of its extent, which reaches to all the goods and chattels of the party within the county. This writ lies in two caſes: either when the tenant or defendant is attached and appears not, but makes default; or where the tenant or defendant hath once appeared, and after makes default. On ſuch occaſions, this writ lies by common law, in lieu of a petit cape.

Grand Guſto, among painters, a term uſed to expreſs that there is ſomething in the picture very great and extraordinary, calculated to ſurpriſe, pleaſe, and inſtruct.—Where this is found, they ſay, the painter was a man of *grand guſto*; and they uſe the words *ſublime* and *marvellous*, when they ſpeak of a picture, in much the ſame ſenſe.

Grand Jury, larceny, ſergeanty, &c. See Jury, &c.

GRANDEE, is underſtood of a lord of the firſt rank or prime quality.

In Spain, the term *grandees* is uſed abſolutely to denote the prime lords of the court, to whom the king has once given leave to be covered in his preſence: there are ſome grandees for life only; made by the king's ſaying ſimply, Be covered. Others are grandees by deſcent; made by the king's ſaying, Be covered for thyſelf and heirs. Theſe laſt are reputed far above the former.

There are ſome who have three or four grandeeſhips in their family.

1
Double ſignification.

GRANDEUR *and* Sublimity. Theſe terms have a double ſignification: they commonly ſignify the quality or circumſtance in objects by which the emotions of grandeur and ſublimity are produced; ſometimes the emotions themſelves.

In handling the preſent ſubject, it is neceſſary that the impreſſion made on the mind by the magnitude of an object, abſtracting from its other qualities, ſhould be aſcertained. And becauſe abſtraction is a mental operation of ſome difficulty, the ſafeſt method of judging is, to chooſe a plain object that is neither beautiful nor deformed, if ſuch a one can be found. The plaineſt that occurs, is a huge maſs of rubbiſh, the ruins perhaps of ſome extenſive building; or a large heap of ſtones, ſuch as are collected together for keeping in memory a battle or other remarkable event. Such an object, which in miniature would be perfectly indifferent, makes an impreſſion by its magnitude, and appears agreeable. And ſuppoſing it ſo large as to fill the eye, and to prevent the attention from wandering upon other objects, the impreſſion it makes will be ſo much the deeper. See Attention.

But though a plain object of that kind be agreeable, it is not termed *grand*: it is not entitled to that character, unleſs, together with its ſize, it be poſſeſſed of other qualities that contribute to beauty, ſuch as regularity, proportion, order, or colour: and according to the number of ſuch qualities combined with magnitude, it is more or leſs grand. Thus St Peter's church at Rome, the great pyramid of Egypt, the Alps towering above the clouds, a great arm of the ſea, and above all a clear and ſerene ſky, are grand; becauſe, beſide their ſize, they are beautiful in an eminent degree. On the other hand, an overgrown whale, having a diſagreeable appearance, is not grand. A large building agreeable by its regularity and proportions, is grand; and yet a much larger building deſtitute of regularity, has not the leaſt tincture of grandeur. A ſingle regiment in battly array, makes a grand appearance; which the ſurrounding crowd does not, though perhaps ten for one in number. And a regiment where the men are all in one livery, and the horſes of one colour, makes a grander appearance, and conſequently ſtrikes more terror, than where there is confuſion of colour and dreſs. Thus greatneſs or magnitude is the circumſtance that diſtinguiſhes grandeur from beauty: agreeableneſs is the genus, of which beauty and grandeur are ſpecies.

2
Grandeur diſtinguiſhed from beauty.

The emotion of grandeur, duly examined, will be found an additional proof of the foregoing doctrine. That this emotion is pleaſant in a high degree, requires no other evidence but once to have ſeen a grand object: and if an emotion of grandeur be pleaſant, its cauſe or object, as obſerved above, muſt infallibly be agreeable in proportion.

The qualities of grandeur and beauty are not more diſtinct, than the emotions are which theſe qualities produce in a ſpectator. It is obſerved in the article Beauty, that all the various emotions of beauty have one common character, that of ſweetneſs and gaiety. The emotion of grandeur has a different character:

racter: a large object that is agreeable, occupies the whole attention, and ſwells the heart into a vivid emotion, which, though extremely pleaſant, is rather ſerious than gay. And this affords a good reaſon for diſtinguiſhing in language the different emotions. The emotions raiſed by colour, by regularity, by proportion, and by order, have ſuch a reſemblance to each other, as readily to come under one general term, viz. *the emotion of beauty*; but the emotion of grandeur is ſo different from theſe mentioned, as to merit a peculiar name.

3 Demands not ſtrict regularity.

Though regularity, proportion, order and colour, contribute to grandeur as well as to beauty, yet theſe qualities are not by far ſo eſſential to the former as to the latter. To make out that propoſition, ſome preliminaries are requiſite. In the firſt place, the mind, not being totally occupied with a ſmall object, can give its attention at the ſame time to every minute part; but in a great or extenſive object, the mind, being totally occupied with the capital and ſtriking parts, has no attention left for thoſe that are little or indifferent. In the next place, two ſimilar objects appear not ſimilar when viewed at different diſtances: the ſimilar parts of a very large object, cannot be ſeen but at different diſtances; and for that reaſon, its regularity, and the proportion of its parts, are in ſome meaſure loſt to the eye; neither are the irregularities of a very large object ſo conſpicuous as of one that is ſmall. Hence it is, that a large object is not ſo agreeable by its regularity, as a ſmall object; nor ſo diſagreeable by its irregularities.

4 Qualities contributing to grandeur.

Theſe conſiderations make it evident, that grandeur is ſatisfied with a leſs degree of regularity, and of the other qualities mentioned, than is requiſite for beauty; which may be illuſtrated by the following experiment. Approaching to a ſmall conical hill, we take an accurate ſurvey of every part, and are ſenſible of the ſlighteſt deviation from regularity and proportion. Suppoſing the hill to be conſiderably enlarged, ſo as to make us leſs ſenſible of its regularity, it will upon that account appear leſs beautiful. It will not, however, appear leſs agreeable, becauſe ſome ſlight emotion of grandeur comes in place of what is loſt in beauty. And at laſt, when the hill is enlarged to a great mountain, the ſmall degree of beauty that is left, is ſunk in its grandeur. Hence it is, that a towering hill is delightful, if it have but the ſlighteſt reſemblance of a cone; and a chain of mountains not leſs ſo, though deficient in the accuracy of order and proportion. We require a ſmall ſurface to be ſmooth; but in an extenſive plain, conſiderable inequalities are overlooked. In a word, regularity, proportion, order, and colour, contribute to grandeur as well as to beauty; but with a remarkable difference, that in paſſing from ſmall to great, they are not required in the ſame degree of perfection. This remark ſerves to explain the extreme delight we have in viewing the face of nature, when ſufficiently enriched and diverſified with objects. The bulk of the objects in a natural landſcape are beautiful, and ſome of them grand: a flowing river, a ſpreading oak, a round hill, an extended plain, are delightful; and even a rugged rock, or barren heath, though in themſelves diſagreeable, contribute by contraſt to the beauty of the whole; joining to theſe the verdure of the fields, the mixture of light and ſhade, and the ſublime canopy ſpread over all; it will not appear wonderful, that ſo extenſive a group of ſplendid objects ſhould ſwell the heart to its utmoſt bounds, and raiſe the ſtrongeſt emotion of grandeur. The ſpectator is conſcious of an enthuſiaſm which cannot bear confinement, nor the ſtrictneſs of regularity and order: he loves to range at large; and is ſo enchanted with magnificent objects, as to overlook ſlight beauties or deformities.

5 Sublimity.

The ſame obſervation is applicable in ſome meaſure to works of art. In a ſmall building, the ſlighteſt irregularity is diſagreeable: but in a magnificent palace, or a large Gothic church, irregularities are leſs regarded. In an epic poem, we pardon many negligences that would not be permitted in a ſonnet or epigram. Notwithſtanding ſuch exceptions, it may be juſtly laid down for a rule, That in works of art, order and regularity ought to be governing principles; and hence the obſervation of Longinus, "In works "of art we have regard to exact proportion; in thoſe "of nature, to grandeur and magnificence."

The ſame reflections are in a good meaſure applicable to ſublimity: particularly that, like grandeur, it is a ſpecies of agreeableneſs; that a beautiful object placed high, appearing more agreeable than formerly, produces in the ſpectator a new emotion, termed *the emotion of ſublimity*; and that the perfection of order, regularity, and proportion, is leſs required in objects placed high, or at a diſtance, than at hand.

The pleaſant emotion raiſed by large objects, has not eſcaped the poets:

——————He doth beſtride the narrow world
Like a Colloſſus: and we petty men
Walk under his huge legs. *Julius Cæſar. act 1. ſc. 3.*

Cleopatra. I dreamt there was an emp'ror Antony:
Oh ſuch another ſleep, that I might ſee
But ſuch another man!
His face was as the heav'ns—and therein ſtuck
A ſun and moon, which kept their courſe, and lighted
The little O o' th' earth.
His legs beſtride the ocean, his rear'd arm
Creſted the world. *Antony and Cleopatra, act 5. ſc. 3.*

——————Majeſty
Dies not alone—but, like a gulph, doth draw
What's near it with it. It's a maſſy wheel
Fixed on the ſummit of the higheſt mount,
To whoſe huge ſpokes ten thouſand leſſer things
Are mortis'd and adjoin'd—which, when it falls,
Each ſmall annexment, petty conſequence,
Attends the boiſt'rous ruin. *Hamlet, act 3, ſc. 8.*

The poets have alſo made good uſe of the emotion produced by the elevated ſituation of an object:

Quod ſi me lyricis vatibus inſeres,
Sublimi feriam ſidera vertice. *Horat Carm. l. 2. ode 1.*

Oh thou! the earthly author of my blood,
Whoſe youthful ſpirit, in me regenerate,
Doth with a twofold vigour lift me up,
To reach at victory above my head.
Richard II. act 1. ſc. 4.

Northumberland, thou ladder wherewithal
The mounting Bolingbroke aſcends my throne.
Richard II. act 5. ſc. 2.

Antony. Why was I rais'd the meteor of the world,
Hung in the ſkies; and blazing as I travell'd,
Till all my fires were ſpent; and then caſt downward
To be trod out by Cæſar? *Dryden, All for Love, act 1.*

The deſcription of Paradiſe in the fourth book of

Paradiſe Loſt, is a fine illuſtration of the impreſſion made by elevated objects:

> So on he fares, and to the border comes
> Of Eden, where delicious Paradiſe,
> Now nearer, crowns with her incloſure green,
> As with a rural mound, the champain head
> With a ſteep wilderneſs; whoſe hairy ſides
> Of thicket overgrown, groteſque and wild,
> Acceſs deny'd; and over head up grew
> Inſuperable height of loftieſt ſhade,
> Cedar, and pine, and fir, and branching palm,
> A ſylvan ſcene; and as the ranks aſcend,
> Shade above ſhade, a woody theatre
> Of statelieſt view. Yet higher than their tops
> The verd'rous wall of Paradiſe up ſprung;
> Which to our general ſire gave proſpect large
> Into his nether empire, neighb'ring round.
> And higher than that wall a circling row
> Of goodlieſt trees, loaden with faireſt fruit,
> Bloſſoms and fruits at once of golden hue,
> Appear'd, with gay enamell'd colours mix'd. *l.* 131.

Though a grand object is agreeable, we muſt not infer that a little object is diſagreeable; which would be unhappy for man, conſidering that he is ſurrounded with ſo many objects of that kind. The ſame holds with reſpect to place: a body placed high is agreeable; but the ſame body placed low, is not by that circumſtance rendered diſagreeable. Littleneſs and lowneſs of place are preciſely ſimilar in the following particular, that they neither give pleaſure nor pain. And in this may viſibly be diſcovered peculiar attention in fitting the internal conſtitution of man to his external circumſtances. Were littleneſs and lowneſs of place agreeable, greatneſs and elevation could not be ſo: were littleneſs and lowneſs of place diſagreeable, they would occaſion uninterrupted uneaſineſs.

The difference between great and little with reſpect to agreeableneſs, is remarkably felt in a ſeries when we paſs gradually from the one extreme to the other. A mental progreſs from the capital to the kingdom, from that to Europe—to the whole earth—to the planetary ſyſtem, to the univerſe, is extremely pleaſant: the heart ſwells, and the mind is dilated at every ſtep. The returning in an oppoſite direction is not poſitively painful, though our pleaſure leſſens at every ſtep, till it vaniſh into indifference: ſuch a progreſs may ſometimes produce pleaſure of a different ſort, which ariſes from taking a narrower and narrower inſpection. The ſame obſervation holds in a progreſs upward and downward. Aſcent is pleaſant becauſe it elevates us; but deſcent is never painful: it is for the moſt part pleaſant from a different cauſe, that it is according to the order of nature. The fall of a ſtone from any height, is extremely agreeable by its accelerated motion. We feel it pleaſant to deſcend from a mountain, becauſe the deſcent is natural and eaſy. Neither is looking downward painful; on the contrary, to look down upon objects, makes part of the pleaſure of elevation: looking down becomes then only painful when the object is ſo far below as to create dizzineſs; and even when that is the caſe, we feel a ſort of pleaſure mixed with the pain: witneſs Shakeſpeare's deſcription of Dover cliffs:

> ————————How fearful
> And dizzy 'tis, to caſt one's eye ſo low!
> The crows and choughs, that wing the midway air,
> Show ſcarce ſo groſs as beetles. Half-way down
> Hangs one that gathers ſamphire; dreadful trade!
> Methinks he ſeems no bigger than his head.
> The fiſhermen that walk upon the beach
> Appear like mice; and yon tall anchoring bark
> Diminiſh'd to her cock; her cock, a buoy
> Almoſt too ſmall for ſight. The murm'ring ſurge,
> That on the unnumber'd idle pebbles chafes,
> Cannot be heard ſo high. I'll look no more,
> Leſt my brain turn, and the deficient ſight
> Topple down headlong. *King Lear, act* 4. *ſc.* 6.

A remark is made above, that the emotions of grandeur and ſublimity are nearly allied. And hence it is, that the one term is frequently put for the other: an increaſing ſeries of numbers, for example, producing an emotion ſimilar to that of mounting upward, is commonly termed *an aſcending ſeries*: a ſeries of numbers gradually decreaſing, producing an emotion ſimilar to that of going downward, is commonly termed *a deſcending ſeries*: we talk familiarly of going *up* to the capital, and of going *down* to the country: from a leſſer kingdom we talk of going *up* to a greater; whence the *anabaſis* in the Greek language, when one travels from Greece to Perſia. We diſcover the ſame way of ſpeaking in the language even of Japan; and its univerſality proves it the offſpring of a natural feeling.

6 Grandeur and ſublimity in a figurative ſenſe.

The foregoing obſervation leads us to conſider grandeur and ſublimity in a figurative ſenſe, and as applicable to the fine arts. Hitherto theſe terms have been taken in their proper ſenſe as applicable to objects of ſight only: and it was of importance to beſtow ſome pains upon that article; becauſe, generally ſpeaking, the figurative ſenſe of a word is derived from its proper ſenſe, which holds remarkably at preſent. Beauty, in its original ſignification, is confined to objects of ſight; but as many other objects, intellectual as well as moral, raiſe emotions reſembling that of beauty, the reſemblance of the effects prompts us to extend the term *beauty* to theſe objects. This equally accounts for the terms *grandeur* and *ſublimity* taken in a figurative ſenſe. Every emotion, from whatever cauſe proceeding, that reſembles an emotion of grandeur or elevation, is called by the ſame name: thus generoſity is ſaid to be an *elevated* emotion, as well as great courage; and that firmneſs of ſoul which is ſuperior to misfortunes obtains the peculiar name of *magnanimity*. On the other hand, every emotion that contracts the mind, and fixeth it upon things trivial or of no importance, is termed *low*, by its reſemblance to an emotion produced by a little or low object of ſight: thus an appetite for trifling amuſements is called a *low taſte*. The ſame terms are applied to characters and actions: we talk familiarly of an *elevated* genius, of *great* man, and equally ſo of *littleneſs* of mind: ſome actions are *great* and *elevated*, and others are *little* and *groveling*. Sentiments, and even expreſſions, are characteriſed in the ſame manner: an expreſſion or ſentiment that raiſes the mind is denominated *great* or *elevated*, and hence the SUBLIME in poetry. In ſuch figurative terms, we loſe the diſtinction between *great* and *elevated* in their proper ſenſe; for the reſemblance is not ſo entire as to preſerve theſe terms diſtinct in their figurative application. We carry this figure ſtill farther. Elevation, in its proper ſenſe, imports ſuperiority of place; and lowneſs, inferiority of place: and hence a man of *ſuperior* talents, of *ſuperior* rank; of *inferior* parts, of *inferior* taſte, and ſuch like. The veneration we have for our anceſtors, and for the ancients in general, being ſimilar to the emotion produced by an

7 The ſublime in poetry.

elevated object of ſight, juſtifies the figurative expreſſion of the ancients being *raiſed* above us, or poſſeſſing a *ſuperior* place. The notes of the gamut, proceeding regularly from the blunter or groſſer ſounds to the more acute and piercing, produce in the hearer a feeling ſomewhat ſimilar to what is produced by mounting upward; and this gives occaſion to the figurative expreſſions *a high note, a low note.*

8 Real and figurative grandeur intimately connected.

Such is the reſemblance in feeling between real and figurative grandeur, that among the nations on the eaſt coaſt of Africa, who are directed purely by nature, the officers of ſtate are, with reſpect to rank, diſtinguiſhed by the length of the batoon each carries in his hand; and in Japan, princes and great lords ſhow their rank by the length and ſize of their ſedan-poles. Again, it is a rule in painting, that figures of a ſmall ſize are proper for groteſque pieces; but that an hiſtorical ſubject, grand and important, requires figures as great as the life. The reſemblance of theſe feelings is in reality ſo ſtrong, that elevation in a figurative ſenſe is obſerved to have the ſame effect, even externally, with real elevation:

> *K. Henry.* This day is call'd the feaſt of Criſpian.
> He that outlives this day and comes ſafe home,
> Will ſtand a-tip-toe when this day is nam'd,
> And rouſe him at the name of Criſpian.
>
> *Henry V.* act 4. ſc. 8.

The reſemblance in feeling between real and figurative grandeur is humorouſly illuſtrated by Addiſon in criticiſing upon Engliſh tragedy.* "The ordinary method of making an hero is to clap a huge plume of feathers upon his head, which riſes ſo high, that there is often a greater length from his chin to the top of his head than to the ſole of his foot. One would believe, that we thought a great man and a tall man the ſame thing. As theſe ſuperfluous ornaments upon the head make a great man, a princeſs generally receives her grandeur from thoſe additional incumbrances that fall into her tail: I mean the broad ſweeping train that follows her in all her motions; and finds conſtant employment for a boy who ſtands behind her to open and ſpread it to advantage." The Scythians, impreſſed with the fame of Alexander, were aſtoniſhed when they found him a little man.

A gradual progreſs from ſmall to great is not leſs remarkable in figurative than in real grandeur or elevation. Every one muſt have obſerved the delightful effect of a number of thoughts or ſentiments, artfully diſpoſed like an aſcending ſeries, and making impreſſions deeper and deeper: ſuch diſpoſition of members in a period is termed a *climax.*

Within certain limits grandeur and ſublimity produce their ſtrongeſt effects, which leſſen by exceſs as well as by defect. This is remarkable in grandeur and ſublimity taken in their proper ſenſe; the grandeſt emotion that can be raiſed by a viſible object is where the object can be taken in at one view; if ſo immenſe as not to be comprehended but in parts, it tends rather to diſtract than ſatisfy the mind (A): in like manner, the ſtrongeſt emotion produced by elevation is where the object is ſeen diſtinctly; a greater elevation leſſens in appearance the object, till it vaniſh out of ſight with its pleaſant emotions.

9 Figurative grandeur.

The ſame is equally remarkable in figurative grandeur and elevation; which ſhall be handled together, becauſe, as obſerved above, they are ſcarce diſtinguiſhable. Sentiments may be ſo ſtrained as to become obſcure, or to exceed the capacity of the human mind: againſt ſuch licence of imagination, every good writer will be upon his guard. And therefore it is of greater importance to obſerve, that even the true ſublime may be carried beyond that pitch which produces the higheſt entertainment. We are undoubtedly ſuſceptible of a greater elevation than can be inſpired by human actions the moſt heroic and magnanimous; witneſs what we feel from Milton's deſcription of ſuperior beings: yet every man muſt be ſenſible of a more conſtant and ſweet elevation when the hiſtory of his own ſpecies is the ſubject: he enjoys an elevation equal to that of the greateſt hero, of an Alexander or a Cæſar, of a Brutus or an Epaminondas: he accompanies theſe heroes in their ſublimeſt ſentiments and moſt hazardous exploits, with a magnanimity equal to theirs; and finds it no ſtretch to preſerve the ſame tone of mind for hours together without ſinking. The caſe is not the ſame in deſcribing the actions or qualities of ſuperior beings: the reader's imagination cannot keep pace with that of the poet; the mind, unable to ſupport itſelf in a ſtrained elevation, falls as from a height; and the fall is immoderate like the elevation: where that effect is not felt, it muſt be prevented by ſome obſcurity in the conception, which frequently attends the deſcriptions of unknown objects. Hence the St Franciſes, St Dominics, and other tutelary ſaints among the Roman Catholics. A mind unable to raiſe itſelf to the Supreme Being ſelf-exiſtent and eternal, or to ſupport itſelf in a ſtrained elevation, finds itſelf more at eaſe in uſing the interceſſion of ſome ſaint whoſe piety and penances while on earth are ſuppoſed to have made him a favourite in heaven.

A ſtrained elevation is attended with another inconvenience, that the author is apt to fall ſuddenly as well as the reader; becauſe it is not a little difficult to deſcend, ſweetly and eaſily, from ſuch elevation to the ordinary tone of the ſubject. The following paſſage is a good illuſtration of that obſervation:

> Sæpe etiam immenſum cœlo venit agmen aquarum,
> Et fœdam glomerant tempeſtatem imbribus atris
> Conlectæ ex alto nubes. Ruit arduus æther,
> Et pluvia ingenti lata læta boumque labores
> Diluit. Inplentur foſſæ, et cava flumina creſcunt
> Cum ſonitu, fervetque fretis ſpirantibus æquor.
> Ipſe Pater, media nimborum in nocte, coruſca
> Fulmina molitur dextra. Quo maxuma motu
> Terra tremit: fugere feræ, et mortalia corda
> Per gentes humilis ſtravit pavor. Ille flagranti
> Aut Atho, aut Rhodopen, aut alta Ceraunia telo
> Dejicit: *ingeminant Auſtri, et denſiſſimus imber.*
>
> *Virg. Georg.* l. 1.

In

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* *Spectator,* N° 42.

(A) It is juſtly obſerved by Addiſon, that perhaps a man would have been more aſtoniſhed with the majeſtic air that appeared in one of Lyſippus's ſtatues of Alexander, though no bigger than the life, than he might have been with Mount Athos, had it been cut into the figure of the hero, according to the propoſal of Phidias, with a river in one hand and a city in the other. *Spectator,* N° 415.

Grandeur and Sublimity.

In the deſcription of a ſtorm, to figure Jupiter throwing down huge mountains with his thunderbolts, is hyperbolically ſublime, if we may uſe the expreſſion: the tone of mind produced by that image is is ſo diſtant from the tone produced by a thick ſhower of rain, that the ſudden tranſition muſt be unpleaſant.

Objects of ſight that are not remarkably great nor high, ſcarce raiſe any emotion of grandeur or of ſublimity: and the ſame holds in other objects; for we often find the mind rouſed and animated, without being carried to that height. This difference may be diſcerned in many ſorts of muſic, as well as in ſome muſical inſtruments: a kettle-drum rouſes, and a hautboy is animating; but neither of them inſpires an emotion of ſublimity: revenge animates the mind in a conſiderable degree; but it never produceth an emotion that can be termed *grand* or *ſublime*; and perhaps no diſagreeable paſſion ever has that effect.

No deſire is more univerſal than to be exalted and honoured; and upon that account, chiefly, are we ambitious of power, riches, titles, fame, which would ſuddenly loſe their reliſh did they not raiſe us above others, and command ſubmiſſion and deference: and it may be thought, that our attachment to things grand and lofty, proceeds from their connection with our favourite paſſion. This connection has undoubtedly an effect; but that the preference given to things grand and lofty muſt have a deeper root in human nature, will appear from conſidering, that many beſtow their time upon low and trifling amuſements, without having the leaſt tincture of this favourite paſſion: yet theſe very perſons talk the ſame language with the reſt of mankind; and prefer the more elevated pleaſures: they acknowledge a more refined taſte, and are aſhamed of their own as low and groveling. This ſentiment, conſtant and univerſal, muſt be the work of nature; and it plainly indicates an original attachment in human nature to every object that elevates the mind: ſome men may have a greater reliſh for an object not of the higheſt rank; but they are conſcious of the preference given by mankind in general to things grand and ſublime, and they are ſenſible that their peculiar taſte ought to yield to the general taſte.

10 Grandeur of manner.

What is ſaid above ſuggeſts a capital rule for reaching the ſublime in ſuch works of art as are ſuſceptible of it; and that is, to preſent thoſe parts or circumſtances only which make the greateſt figure, keeping out of view every thing low or trivial; for the mind, elevated by an important object, cannot, without reluctance, be forced down to beſtow any ſhare of its attention upon trifles. Such judicious ſelection of capital circumſtances, is by an eminent critic ſtyled *grandeur of manner**. In none of the fine arts is there ſo great ſcope for that rule as in poetry; which, by that means, enjoys a remarkable power of beſtowing upon objects and events an air of grandeur: when we are ſpectators, every minute object preſents itſelf in its order: but in deſcribing at ſecond hand, theſe are laid aſide, and the capital objects are brought cloſe together. A judicious taſte in thus ſelecting the moſt intereſting incidents, to give them an united force, accounts for a fact that may appear ſurpriſing; which is, that we are more moved by ſpirited narrative at ſecond hand, than by being ſpectators of the event itſelf, in all its circumſtances.

Longinus † exemplifies the foregoing rule by a compariſon of two paſſages.

> Ye pow'rs, what madneſs! how on ſhips ſo frail
> (Tremendous thought!) can thoughtleſs mortals ſail?
> For ſtormy ſeas they quit the pleaſing plain,
> Plant woods in waves, and dwell amidſt the main.
> Far o'er the deep (a trackleſs path) they go,
> And wander oceans in purſuit of wo.
> No eaſe their hearts, no reſt their eyes can find,
> On heaven their looks, and on the waves their mind;
> Sunk are their ſpirits, while their arms they rear,
> And gods are wearied with their fruitleſs prayer.
> ARISTÆUS.
>
> Burſt as a wave that from the cloud impends,
> And ſwell'd with tempeſts on the ſhip deſcends
> White are the decks with foam: the winds aloud
> Howl o'er the maſts, and ſing through every ſhroud.
> Pale, trembling, tir'd, the ſailors freeze with fears,
> And inſtant death on every wave appears. HOMER.

In the latter paſſage, the moſt ſtriking circumſtances are ſelected to fill the mind with terror and aſtoniſhment. The former is a collection of minute and low circumſtances, which ſcatter the thought, and make no impreſſion; it is at the ſame time full of verbal antitheſes and low conceit, extremely improper in a ſcene of diſtreſs.

The following deſcription of a battle is remarkably ſublime, by collecting together in the feweſt words, thoſe circumſtances which make the greateſt figure.

"Like autumn's dark ſtorms pouring from two echoing hills, towards each other approached the heroes; as two dark ſtreams from high rocks meet and roar on the plain, loud, rough, and dark in battle, meet Lochlin and Iniſfail. Chief mixes his ſtrokes with chief, and man with man: ſteel ſounds on ſteel, and helmets are cleft on high: blood burſts and ſmokes around: ſtrings murmur on the poliſh'd yew: darts ruſh along the ſky: ſpears fall like ſparks of flame that gild the ſtormy face of night.

"As the noiſe of the troubled ocean when roll the waves on high, as the laſt peal of thundering heaven, ſuch is the noiſe of battle. Though Carmac's hundred bards were there, feeble were the voice of a hundred bards to ſend the deaths to future times; for many were the deaths of the heroes, and wide poured the blood of the valiant." FINGAL.

The following paſſage in the 4th book of the Iliad is a deſcription of a battle wonderfully ardent, "When now gathered on either ſide, the hoſts plunged together in fight; ſhield is harſhly laid to ſhield; ſpears craſh on the brazen corſlets; boſſy buckler with buckler meets; loud tumult rages over all; groans are mixed with boaſts of men; the ſlain and ſlayer join in noiſe; the earth is floating round with blood. As when two ruſhing ſtreams from two mountains come roaring down, and throw together their rapid waters below, they roar along the gulphy vale; the ſtartled ſhepherd hears the ſound as he ſtalks o'er the diſtant hills: ſo, as they mixed in fight, from both armies clamour with loud terror aroſe." But ſuch general deſcriptions are not frequent in Homer. Even his ſingle combats are rare. The fifth book is the longeſt account of a battle that is in the Iliad; and yet contains nothing but a long catalogue of chiefs killing chief chiefs, not in ſingle combat neither, but at a diſtance with an arrow or a javelin; and theſe chiefs named for the firſt time and the laſt. The ſame ſcene is continued through a great part of the ſixth book. There is at the ſame time a minute deſcription of every wound, which for accuracy may do honour to an anatomiſt, but in an epic poem is tireſome and fatiguing. There is no relief from horrid languor but the beautiful Greek language and melody of Homer's verſification.

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* *Spectator*, No. 415.

† *Chap.* 8.

In the twenty-firſt book of the Oydſſey, there is a paſſage which deviates widely from the rule above laid down: it concerns that part of the hiſtory of Penelope and her ſuitors, in which ſhe is made to declare in favour of him who ſhould prove the moſt dexterous in ſhooting with the bow of Ulyſſes:

Now gently winding up the fair aſcent
By many an eaſy ſtep the matron went:
Then o'er the pavement glides with grace divine
(With poliſh'd oak the level pavements ſhine.)
The folding gates a dazzling light diſplay'd,
With pomp of various architrave o'erlaid.
The bolt, obedient to the ſilken ſtring,
Forſakes the ſtaple as ſhe pulls the ring;
The wards reſpondent to the key turn'd round;
The bars fall back; the flying valves reſound.
Loud as a bull makes hill and valley ring,
So roar'd the lock when it releas'd the ſpring.
She moves majeſtic through the wealthy room,
Where treaſur'd garments caſt a rich perfume:
There, from the column where aloft it hung,
Reach'd, in its ſplendid caſe, the bow unſtrung.

Virgil ſometimes errs againſt this rule: in the following paſſages minute circumſtances are brought into full view; and what is ſtill worſe, they are deſcribed with all the pomp of poetical diction, *Æneid*, L. i. l. 214, to 219. L. vi. l. 176, to 182. L. vi. l. 212, to 231: and the laſt, which deſcribes a funeral is the leſs excuſable, as the man whoſe funeral it is makes no figure in the poem.

The ſpeech of Clytemneſtra, deſcending from her chariot, in the Iphigenia of Euripides*, is ſtuffed with a number of common and trivial circumſtances.

But of all writers, Lucan in this article is the moſt injudicious: the ſea-fight between the Romans and Maſſilians † is deſcribed ſo much in detail, without exhibiting any grand or total view, that the reader is fatigued with endleſs circumſtances, without ever feeling any degree of elevation; and yet there are ſome fine incidents, thoſe for example of the two brothers, and of the old man and his ſon, which taken ſeparately, would affect us greatly. But Lucan, once engaged in a deſcription, knows no end. See other paſſages of the ſame kind, L. iv. l. 292, to 337. L. iv. l. 750, to 765. The epiſode of the ſorcereſs Erictho, end of book ſixth, is intolerably minute and prolix.

This rule is alſo applicable to other fine arts. In painting it is eſtabliſhed, that the principal figure muſt be put in the ſtrongeſt light; that the beauty of attitude conſiſts in placing the nobler parts moſt in view, and in ſuppreſſing the ſmaller parts as much as poſſible; that the folds of the drapery muſt be few and large; that foreſhortenings are bad, becauſe they make the parts appear little; and that the muſcles ought to be kept as entire as poſſible, without being divided into ſmall ſections. Every one at preſent ſubſcribes to that rule as applied to gardening, in oppoſition to parterres ſplit into a thouſand ſmall parts in the ſtiffeſt regularity of figure. The moſt eminent architects have governed themſelves by the ſame rule in all their works.

11
General terms ought to be avoided where ſublimity is intended.

Another rule chiefly regards the ſublime, though it is applicable to every ſort of literary performance intended for amuſement; and that is, to avoid as much as poſſible abſtract and general terms. Such terms, ſimilar to mathematical ſigns, are contrived to expreſs our thoughts in a conciſe manner; but images which are the life of poetry, cannot be raiſed in any perfection but by introducing particular objects. General terms, that comprehend a number of individuals, muſt be excepted from that rule: our kindred, our clan, our country, and words of the like import, though they ſcarce raiſe any image, have, however, a wonderful power over the paſſions: the greatneſs of the complex object overbalances the obſcurity of the image.

Grandeur, being an extreme vivid emotion, is not readily produced in perfection but by reiterated impreſſions. The effect of a ſingle impreſſion can be but momentary; and if one feel ſuddenly ſomewhat like a ſwelling or exaltation of mind, the emotion vaniſheth as ſoon as felt. Single thoughts or ſentiments are often cited as examples of the ſublime; but their effect is far inferior to that of a grand ſubject diſplayed in its capital parts. We ſhall give a few examples, that the reader may judge for himſelf. In the famous action of Thermopylæ, where Leonidas the Spartan king, with his choſen band, fighting for their country, were cut off to the laſt man, a ſaying is reported of Dieneces, one of the band, which, expreſſing cheerful and undiſturbed bravery, is well intitled to the firſt place in examples of that kind: talking of the number of their enemies, it was obſerved, that the arrows ſhot by ſuch a multitude would intercept the light of the ſun; "So much the better (ſays he), for we then ſhall in fight the ſhade."

Herodot. lib. 7.

Somerſet. Ah! Warwick, Warwick, wert thou as we are,
We might recover all our loſs again.
The Queen from France has brought a puiſſant power,
Ev'n now we heard the news. Ah! could'ſt thou fly!
Warwick. Why, I then would not fly.
Third part, Henry VI, act. 5. ſc. 3.

Such a ſentiment from a man expiring of his wounds, is truly heroic; and muſt elevate the mind to the greateſt height that can be done by a ſingle expreſſion: It will not ſuffer in a compariſon with the famous ſentiment *Qu'il mourut* of Corneille: the latter is a ſentiment of indignation merely, the former of firm and cheerful courage.

To cite in oppoſition many a ſublime paſſage, enriched with the fineſt images, and dreſſed in the moſt nervous expreſſions, would ſcarce be fair. We ſhall produce but one inſtance, from Shakeſpeare, which ſets a few objects before the eye, without much pomp of language: it operates its effect by repreſenting theſe objects in a climax, raiſing the mind higher and higher till it feel the emotion of grandeur in perfection:

The cloud-capt tow'rs, the gorgeous palaces,
The ſolemn temples, the great globe itſelf,
Yea, all which it inherit, ſhall diſſolve, &c.

The cloud-capt tow'rs produce an elevating emotion, heightened by the *gorgeous palaces*; and the mind is carried ſtill higher and higher by the images that follow.

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* *Act* 3.

† Lib. iii. 567.

low. Succeſſive images, making thus ſtronger and ſtronger impreſſions, muſt elevate more than any ſingle image can do.

12 Grandeur and ſublimity employed indirectly to ſink the mind.

As, on the one hand, no means directly applied have more influence to raiſe the mind than grandeur and ſublimity; ſo, on the other, no means indirectly applied have more influence to ſink and depreſs it: for in a ſtate of elevation, the artful introduction of an humbling object, makes the fall great in proportion to the elevation. Of this obſervation Shakeſpeare gives a beautiful example in the paſſage laſt quoted:

> The cloud-capt tow'rs, the gorgeous palaces,
> The ſolemn temples, the great globe itſelf,
> Yea, all which it inherit, ſhall diſſolve,
> And like the baſeleſs fabric of a viſion
> Leave not a wreck behind—— *Tempeſt*, act 4. ſc. 4.

The elevation of the mind in the former part of this beautiful paſſage, makes the fall great in proportion, when the moſt humbling of all images is introduced, that of an utter diſſolution of the earth and its inhabitants. The mind, when warmed, is more ſuſceptible of impreſſions than in a cool ſtate; and a depreſſing or melancholy object liſtened to, makes the ſtrongeſt impreſſion when it reaches the mind in its higheſt ſtate of elevation or cheerfulneſs.

But a humbling image is not always neceſſary to produce that effect: a remark is made above, that in deſcribing ſuperior beings, the reader's imagination, unable to ſupport itſelf in a ſtrained elevation, falls often as from a height, and ſinks even below its ordinary tone. The following inſtance comes luckily in view; for a better cannot be given: "God ſaid, Let there be light, and there was light." Longinus quotes this paſſage from Moſes as a ſhining example of the ſublime; and it is ſcarce poſſible, in fewer words, to convey ſo clear an image of the infinite power of the Deity: but then it belongs to the preſent ſubject to remark, that the emotion of ſublimity raiſed by this image is but momentary; and that the mind, unable to ſupport itſelf in an elevation ſo much above nature, immediately ſinks down into humility and veneration for a Being ſo far exalted above groveling mortals. Every one is acquainted with a diſpute about that paſſage between two French critics *, the one poſitively affirming it to be ſublime, the other as poſitively denying. What has been remarked, ſhows, that both of them have reached the truth, but neither of them the whole truth: the primary effect of the paſſage is undoubtedly an emotion of grandeur; which ſo far juſtifies Boileau: but then every one muſt be ſenſible, that the emotion is merely a flaſh, which, vaniſhing inſtantaneouſly, gives way to humility and veneration. That indirect effect of ſublimity juſtifies Huet, on the other hand, who being a man of true piety, and probably not much carried by imagination, felt the humbling paſſions more ſenſibly than his antagoniſt did. And laying aſide difference of character, Huet's opinion may perhaps be defended as the more ſolid; becauſe, in ſuch images, the depreſſing emotions are the more ſenſibly felt, and have the longer endurance.

13 Falſe ſublime.

The ſtraining an elevated ſubject beyond due bounds, and beyond the reach of an ordinary conception, is not a vice ſo frequent as to require the correction of criticiſm. But falſe ſublime is a rock that writers of more fire than judgment commonly ſplit on; and therefore a collection of examples may be of uſe as a beacon to future adventurers. One ſpecies of falſe ſublime, known by the name of *bombaſt*, is common among writers of a mean genius: it is a ſerious endeavour, by ſtrained deſcription, to raiſe a low or familiar ſubject above its rank; which, inſtead of being ſublime, fails not to be ridiculous. The mind, indeed, is extremely prone, in ſome animating paſſions, to magnify its objects beyond natural bounds: but ſuch hyperbolical deſcription has its limits: and when carried beyond the impulſe of the propenſity, it degenerates into burleſque. Take the following examples:

> *Sejanus.*——————Great and high
> The world knows only two, that's Rome and I.
> My roof receives me not: 'tis air I tread,
> And at each ſtep I feel my advanc'd head
> Knock out a ſtar in heav'n, *Sejanus, Ben Johnſon, act 5.*

A writer who has no natural elevation of mind deviates readily into bombaſt: he ſtrains above his natural powers; and the violent effort carries him beyond the bounds of propriety.

> *Guilford.* Give way, and let the guſhing torrent come;
> Behold the tears we bring to ſwell the deluge,
> Till the flood riſe upon the guilty world,
> And make the ruin common.
> *Lady Jane Grey, act 4. near the end.*

Another ſpecies of falſe ſublime is ſtill more faulty than bombaſt; and that is, to force elevation by introducing imaginary beings without preſerving any propriety in their actions; as if it were lawful to aſcribe every extravagance and inconſiſtence to beings of the poet's creation. No writers are more licentious in that article than Johnſon and Dryden:

> Methinks I ſee Death and the Furies waiting
> What we will do, and all the heavens at leiſure
> For the great ſpectacle. Draw then your ſwords:
> And if our deſtiny envy our virtue
> The honour of the day, yet let us care
> To ſell ourſelves at ſuch a price, as may
> Undo the world to buy us, and make Fate,
> While ſhe tempts ours, to fear her own eſtate
> *Catiline, act 5.*

> ———The Furies ſtood on hills
> Circling the place, and trembled to ſee men
> Do more than they: whilſt Piety left the field,
> Griev'd for that ſide, that in ſo bad a cauſe
> They knew not what a crime their valour was,
> The Sun ſtood ſtill, and was, behind the cloud
> The battle made, ſeen ſweating to drive up
> His frighted horſe, whom ſtill the noiſe drove backward.
> *Ibid. act 5.*

> *Oſmyn.* While we indulge our common happineſs,
> He is forgot by whom we all poſſeſs,
> The brave Almanzor, to whoſe arms we owe
> All that we did, and all that we ſhall do;
> Who like a tempeſt that outrides the wind,
> Made a juſt battle ere the bodies join'd.
> *Abdalla.* His victories we ſcarce could keep in view,
> Or poliſh 'em ſo faſt as he rough drew.
> *Abdemelech.* Fate after him below with pain did move,
> And Victory could ſcarce keep pace above.
> Death did at length ſo many ſlain forget,
> And loſt the tale, and took 'em by the great.
> *Conqueſt of Granada, act 2. at beginning.*

An actor on the ſtage may be guilty of bombaſt as well as an author in his cloſet: a certain manner of acting, which is grand when ſupported by dignity in the ſentiment and force in the expreſſion, is ridiculous where the ſentiment is mean and the expreſſion flat.

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* *Boileau* and *Huet.*

GRANDGOR is uſed in Scotland for the pox. In the Philoſophical Tranſactions, n° 469. ſect. 5. we have a proclamation of king James IV. of Scotland, ordering all who had this diſeaſe, or who had attended others under it, forthwith to repair to an iſland in the Frith of Forth. If the grandgor was the pox, and this diſtemper came into Europe at the ſiege of Naples in 1495, it muſt have made a very quick progreſs to cauſe ſuch an alarm at Edinburgh in 1497.

GRANGE, an ancient term for a barn or place wherein to lay up and threſh corn. The word is formed of the Latin *granea*; or of *granum*, "grain, corn," &c. Hence alſo *granger* or *grangier*, "a grange-keeper or farmer."

GRANGE is alſo uſed, in a more extenſive ſenſe, for a whole farm, with all the appendages of ſtables for horſes, ſtalls for cattle, &c. and for an inn.

GRANI, in our ancient Writers, muſtachoes or whiſkers of a beard. The word ſeems formed from the ancient Britiſh or Iriſh *greann*, "a beard." It is given for a reaſon why the cup is refuſed to the laity, *Quia barbati, & prolixos habent granos, dum poculum inter epulas ſumunt, prius liquore pilos inficiunt, quam ori infundant.*

GRANICUS, a ſmall river near the Helleſpont in Leſſer Aſia, remarkable for the firſt victory gained by Alexander the Great over the armies of Darius.—Authors diſagree very much about the number of the Perſians, though all agree that they were vaſtly more numerous than the Greeks. Juſtin and Oroſius tell us, that the Perſian army conſiſted of 600,000 foot and 20,000 horſe; Arrian makes the foot amount to 200,000; But Diodorus tells us, that they were not more than 100,000 foot and 10,000 horſe. The Macedonian army did not exceed 30,000 foot and 5000 horſe. The Perſian cavalry lined the banks of the Granicus, in order to oppoſe Alexander wherever he ſhould attempt a paſſage; and the foot were poſted behind the cavalry on an eaſy aſcent. Parmenio would have had Alexander to allow his troops ſome time to refreſh themſelves; but he replied, that, after having croſſed the Helleſpont, it would be a diſgrace to him and his troops to be ſtopped by a rivulet. Accordingly a proper place for croſſing the river was no ſooner found, that he commanded a ſtrong detachment of horſe to enter; he himſelf followed with the right wing, which he commanded in perſon; the trumpets in the mean time ſounding, and loud ſhouts of joy being heard through the whole army. The Perſians let fly ſuch ſhowers of arrows againſt the detachment of Macedonian horſe, as cauſed ſome confuſion; ſeveral of their horſes being killed or wounded. As they drew near the bank a moſt bloody engagement enſued; the Macedonians attempting to land, and the Perſians puſhing them back into the river. Alexander, who obſerved the confuſion they were in, took the command of them himſelf; and landing in ſpite of all oppoſition, obliged the Perſian cavalry, after an obſtinate reſiſtance, to give ground. However, Spithrobates, governor of Ionia, and ſon-in-law to Darius, ſtill maintained his ground, and did all that lay in his power to bring them back to the charge. Alexander advanced full gallop to engage him; neither did he decline the combat, and both were ſlightly wounded at the firſt encounter. Spithrobates having thrown his javelin without effect, advanced ſword in hand to meet his antagoniſt, who ran him through with his pike as he raiſed his arm to diſcharge a blow with his ſcymitar. But Roſaces, brother to Spithrobates, at the ſame time gave Alexander ſuch a furious blow on the head with his battle-ax, that he beat off his plume, and ſlightly wounded him through the helmet. As he was ready to repeat the blow, Clitus with one ſtroke of his ſcymitar cut off Roſaces's head, and thus in all probability ſaved the life of his ſovereign. The Macedonians then, animated by the example of their king, attacked the Perſians with new vigour, who ſoon after betook themſelves to flight. Alexander did not purſue them; but immediately charged the enemy's foot with all his forces, who had now paſſed the river. The Perſians, diſheartened at the defeat of their cavalry, made no great reſiſtance. The Greek mercenaries retired in good order to a neighbouring hill, whence they ſent deputies to Alexander deſiring leave to march off unmoleſted. But he, inſtead of coming to a parley with them, ruſhed furiouſly into the middle of this ſmall body; where his horſe was killed under him, and he himſelf in great danger of being cut in pieces. The Greeks defended themſelves with incredible valour for a long time, but were at laſt almoſt entirely cut off. In this battle the Perſians are ſaid to have loſt 20,000 foot and 2500 horſe, and the Macedonians only 55 foot and 60 horſe.

GRANITE, in natural hiſtory, a diſtinct genus of ſtones, compoſed of ſeparate and very large concretions rudely compacted together; of great hardneſs, giving fire with ſteel, not fermenting with acids, and ſlowly and imperfectly calcinable in a great fire.

Of this genus there are three ſpecies: 1. The hard white granite, with black ſpots, commonly called moorſtone. This is a very valuable kind, conſiſting of a beautiful congeries of very variouſly conſtructed and differently coloured particles, not diffuſed among or running into one another, but each pure and diſtinct, though firmly adhering to whichever of the others it comes in contact with, and forming a very firm maſs. It is much uſed in London for the ſteps of public buildings, and on other occaſions where great ſtrength and hardneſs are required. 2. The hard red granite variegated with black and white, and common in Egypt and Arabia. 3. The pale whitiſh granite, variegated with black and yellow. This is ſometimes found in ſtrata, but more frequently in looſe nodules, and is uſed for paving the ſtreets.

Some of theſe kinds of ſtones are found in almoſt every country, and in many places they are found of immenſe bigneſs. The largeſt maſs of this kind in the known world, lying as an unconnected ſtone, is found near the Cape of Good Hope in Africa, and of which we have the following deſcription in the Philoſoph. Tranſact. vol. 68. p. 102, given by Mr Anderſon in a letter to Sir John Pringle. "The ſtone is ſo remarkable, that it is called by the people here the *Tower of Babel*, and by ſome the *Pearl Diamond*. It either takes the laſt name from a place near which it is ſituated, or it gives names to the tract of cultivated land called the Pearl. It lies upon the top of a ridge of low hills, beyond a large plain, at the diſtance of about thirty miles from the Cape Town; beyond which, at a little diſtance, is a range of hills of a much greater height. It is of an oblong ſhape, and lies north and ſouth. The ſouth end is higheſt; the eaſt and weſt ſides are ſteep and high; but the top is rounded, and ſlopes away gradually to the north end, ſo that you can aſcend it by that way, and enjoy a moſt extenſive proſpect of the whole country. I could not preciſely determine its circumference, but it took us above half an hour to walk round it; and by making every allowance for the rugged way, and ſtopping a little, I think the moſt moderate computation muſt make it exceed half a mile. The ſame difficulty occurred with reſpect to knowing its height: but I think, that, at the ſouth end, it is nearly equal to half its length: or, were I to compare it to an object you are acquainted with, I ſhould ſay it equalled the dome of St Paul's church.

"I am uncertain whether it ought to be conſidered as the top of the hill, or a detached ſtone, becauſe there is no poſitive proof of either, unleſs we were to dig about its baſe; but it would certainly impreſs every beholder, at firſt ſight, with the idea of its being one ſtone, not only from its figure, but becauſe it is really one ſolid uniform maſs from top to bottom, without any interruption; which is contrary to the general character of the high hills of this country, they being commonly divided, or compoſed of different ſtrata, at leaſt if we may judge from the rows of plants or ſhrubs which grow on the ſides of the ſteepeſt, and, as I ſuppoſe, are produced from the ſmall quantity of earth interpoſed between them. It has indeed a few fiſſures, or rather impreſſions, which do not reach deeper than four or five feet; and near its north end a ſtratum of a more compact ſtone runs acroſs, which is not above twelve or fourteen inches thick, with its ſurface divided into little ſquares, or oblongs, diſpoſed obliquely. This ſtratum is perpendicular; but whether it cuts the other to its baſe, or is ſuperficial, I cannot determine. Its ſurface is alſo ſo ſmooth that, it does not appear to have formerly been joined to, or ſeparated from, any other part by violence, as is the caſe with many other large fragments; but enjoys the exact ſituation where it was originally placed, and has undergone little change from being expoſed for ſo many ſucceſſive ages to the calcining power of a very hot climate."—A part of this ſtone being examined by Sir William Hamilton, he determined it to be a granite, and of the ſame nature with the tops of ſome of the Alps; and ſuppoſes both of them to have been elevated by volcanic exploſions.

Granite, a genus of ſtones of the order of petræ, belonging to the claſs of ſaxa. The principal conſtituent parts of this ſtone are felt-ſpar or rhombic quartz, mica, and quartz. Theſe ingredients conſtitute the hardeſt ſort of granite, and that moſt anciently known. That into which ſchoerl enters is more ſubject to decompoſition. They never have any particular texture or regular form, but conſiſt of enormous ſhapeleſs maſſes extremely hard. In the finer granites the quartz is tranſparent; in others generally white or grey, violet or brown. The felt-ſpar is generally the moſt copious ingredient, and of a white, yellow, red, black, or brown colour. The mica is alſo grey, brown, yellow, green, red, violet, or black; and commonly the leaſt copious. The ſhoerl is generally black, and abounds in the granites that contain it. Hence the colour of the granites depends principally on that of the ſpar or ſchoerl. The red granites conſiſt commonly of white quartz, red felt-ſpar, and grey mica; the grey ones of white quartz, grey or violet felt-ſpar, and black mica. The black granites commonly contain ſchoerl inſtead of felt-ſpar; and the green uſually contain green quartz.

On expoſing granite to the flame of a blow-pipe, the component ingredients ſeparate frome one another. Mr Gerhard having melted ſome in a crucible, found the felt-ſpar run into a tranſparent glaſs; below it the mica lay in form of black ſlag, the quartz remaining unaltered. It melted ſomewhat better when all the three were powdered and mixed together; though even then the quartz was ſtill diſcernible by a magnifying glaſs. Hence we may explain the reaſon why grains of a white colour are ſometimes found in volcanic lavas. The mixture of mica prevents the ſilex or quartz from ſplitting or cracking; and hence its infuſibility and uſe in furnace-building.

Granites are ſeldom ſlaty or laminated. In thoſe which are of a cloſe texture, the quartz and ſchoerl predominate. They take a good poliſh; for which reaſon the Egyptians formerly, and the Italians ſtill work them into large pieces of ornamental architecture, for which they are extremely fit, as not being liable to decay in the air. Farber, in his letters from Italy, mentions a kind of ſtone named *granitone*, compoſed of felt-ſpar and mica: a ſubſtance of this kind, which moulders in the air, is found in Finland; which is ſaid to contain ſalt-petre, and ſometimes common ſalt. In that country it is called *rapakiri*. Wallerius deſcribes 18 ſpecies of granites, beſides many others akin to this genus. Thoſe deſcribed by Cronſtedt are, 1. Looſe or friable, which comes from France, and is uſed at the braſs-works for caſting that metal in. 2. Hard or compact, of which there are two varieties, red and grey. The former is met with of two kinds: viz. fine-grained from Swappari in Lapland, or coarſe-grained from the province of Dalarne in Sweden. The grey, with other colours, is met with on the coaſt round Stockholm and Norland in Sweden.

GRANITELLO, a genus of ſtones of the order of petræ, belonging to the claſs of ſaxa. There are two ſpecies, 1. That compoſed of diſtinct particles, found in ſeveral of the mountainous parts of Sweden. In ſome of theſe there is a predominance of quartzoſe particles, in others of micaceous; in which laſt caſe the ſtone is ſlaty, and eaſily ſplit. 2. Granitello, compoſed of convoluted particles. This is met with of different colours, as whitiſh grey, greeniſh, and reddiſh.

Both theſe kinds of ſtone are uſed in building furnaces, on account of the powerful reſiſtance they make to the fire; but the latter is preferable to the other, on account of its containing a little of a refractory clayiſh ſubſtance. It is likewiſe of great uſe in mills, where the fellow is a coarſe ſand-ſtone.

GRANIVOROUS, an appellation given to animals which feed on corn or ſeeds. Theſe are principally of the bird kind.

GRANT, in law, a conveyance in writing of ſuch things as cannot paſs or be conveyed by word only; ſuch are rents, reverſions, ſervices, &c.

Grant (Francis), Lord Cullen, an eminent lawyer and judge in Scotland, was deſcended from a younger branch of the family of the Grants of Grant in that kingdom, and was born about the year 1660. When he commenced advocate, he made a diſtinguiſhed figure at the revolution, by oppoſing the opinion of the old lawyers, who warmly argued on the inability of the convention of eſtates to make any diſpoſition of the crown. The abilities he ſhowed in favour of the revolution recommended him to an extenſive practice; in which he acquired ſo much honour, that when the union between the two kingdoms was in agitation, queen Anne unexpectedly, and without application, created him a baronet, with a view of ſecuring his intereſt in that meaſure; and upon the ſame principle, ſhe ſoon after created him a judge, or one of the lords of ſeſſion. From this time, according to the cuſtom of Scotland, he was ſtyled from the name of his eſtate, Lord Cullen; and the ſame good qualities that recommended him to this honourable office, were very conſpicuous in the diſcharge of it; which he continued for 20 years with the higheſt reputation, when a period was put to his life by an illneſs which laſted but three days. He expired without any agony on March 16th 1726.——His character is drawn to great advantage in the Biographia Britannica; where it is obſerved, among other remarks to his honour, "That as an advocate he was indefatigable in the management of buſineſs; but at the ſame time that he ſpared no pains, he would uſe no craft. He had ſo high an idea of the dignity of his profeſſion, that he held it equally criminal to neglect any honeſt means of coming at juſtice, or to make uſe of any arts to elude it. In reſpect to fortune, though he was modeſt and frugal, and had a large practice, yet he was far from being avaricious. His private charities were very conſiderable, and grew in the ſame proportion with his profits. He was, beſides, very ſcrupulous in many points; he would not ſuffer a juſt cauſe to be loſt through a client's want of money. He was ſuch an enemy to oppreſſion, that he never denied his aſſiſtance to ſuch as laboured under it; and with reſpect to the clergy of all profeſſions (in Scotland,) his conſcience obliged him to ſerve them without a fee. When his merit had raiſed him to the bench, he thought himſelf accountable to God and man for his conduct in that high office; and that deep ſenſe of his duty, at the ſame time that it kept him ſtrictly to it, encouraged and ſupported him in the performance. Whenever he ſat as lord ordinary, the paper of cauſes was remarkably full, for his reputation being equally eſtabliſhed for knowledge and integrity, there were none, who had a good opinion of their own pretenſions, but were deſirous of bringing them before him, and not many who did not ſit down ſatisfied with his deciſion. This prevailed more eſpecially after it was found that few of his ſentences were reverſed; and when they were, it was commonly owing to himſelf: for if, upon mature reflection, or upon new reaſons offered at the re-hearing, he ſaw any juſt ground for altering his judgment, he made no ſcruple of declaring it; being perſuaded, that it was more manly, as well as more juſt, to follow truth, than to ſupport opinion: and his conduct in this reſpect had a right effect; for inſtead of leſſening, it raiſed his reputation. He would not, however, with all this great ſtock of knowledge, experience, and probity, truſt himſelf in matters of blood, or venture to decide in criminal caſes on the lives of his fellow-creatures; which was the reaſon that, though often ſolicited, he could never be prevailed upon to accept of a ſeat in the judiciary court.—In his private character he was as amiable as he was reſpectable in his public. He was charitable without oſtentation, diſintereſted in his friendſhips, and beneficent to all who had any thing to do with him. He was not only ſtrictly juſt; but ſo free from any ſpecies of avarice, that his lady, who was a woman of great prudence and diſcretion, finding him more intent on the buſineſs committed to him by others than on his own, took upon herſelf the care of placing out his money; and to prevent his poſtponing, as he was apt to do, ſuch kind of affairs, when ſecurities offered, ſhe cauſed the circumſtances of them to be ſtated in the form of caſes, and ſo procured his opinion upon his own concerns as if they had been thoſe of a client. He was ſo true a lover of learning, and was ſo much addicted to his ſtudies, that, notwithſtanding the multiplicity of his buſineſs while at the bar, and his great attention to his charge when a judge, he nevertheleſs found time to write various treatiſes on very different and important ſubjects: Some political, which were remarkably well-timed, and highly ſerviceable to the government: others of a more extenſive nature, ſuch as his eſſays on law, religion, and education, which were dedicated to George II. when prince of Wales; by whoſe command, his then ſecretary, Mr Samuel Molyneux, wrote him a letter of thanks, in which were many gracious expreſſions, as well in relation to the piece as to its author. He compoſed, beſides theſe many diſcourſes on literary ſubjects, for the exerciſe of his own thoughts, and for the better diſcovery of truth; which went no farther than his own cloſet, and from a principle of modeſty were not communicated even to his moſt intimate friends."

GRANTHAM, a town of Lincolnſhire, 110 miles from London. It is a neat populous town, with abundance of very good inns of great reſort, on the north road, and ſituated on the river Witham. It is ſuppoſed to have been a Roman town by the remains of a caſtle which have been formerly dug up here. It is governed by an alderman and 12 juſtices of the peace, a recorder, as coroner, an eſcheater, 12 ſecond-twelve men, who are of the common council, and 12 conſtables to attend the court. Here is a fine large church with a ſtone ſpire, one of the loftieſt in England, being 288 feet high, and, by the deception of the ſight, ſeems to ſtand awry, which, by the church being ſituated ſo low, appears to a very great diſadvantage. Here is a good free-ſchool, where Sir Iſaac Newton received his firſt education, beſides two charity-ſchools. On the neighbouring courſe are frequent horſe-races.

GRANVILLE (George), lord Landſdowne, was deſcended from a very ancient family, derived from Rollo the firſt duke of Normandy. At eleven years of age he was ſent to Trinity College in Cambridge, where he remained five years: but at the age of 13 was admitted to the degree of maſter of arts; having, before he was 12, ſpoken a copy of verſes of his own compoſition to the dutcheſs of York at his college, when ſhe paid a viſit to the Univerſity of

Cambridge. In 1696, his comedy called the *She-gallants* was acted at the theatre-royal in Lincolns-inn-fields, as his tragedy called *Heroic Love* was in the year 1698. In 1702 he tranſlated into Engliſh the *ſecond Olynthian of Demoſthenes*. He was member for the county of Cornwall in the parliament which met in 1710; was afterwards ſecretary of war, comptroller of the houſehold, then treaſurer, and ſworn one of the privy-council. The year following he was created baron Lanſdowne. On the acceſſion of king George I. in 1714, he was removed from his treaſurer's place; and the next year entered his proteſt againſt the bills for attainting lord Bolingbroke and the duke of Ormond. He entered deeply into the ſcheme for raiſing an inſurrection in the weſt of England; and being ſeized as a ſuſpected perſon, was committed to the Tower, where he continued two years. In 1719, he made a ſpeech in the houſe of Lords, againſt the bill to prevent occaſional conformity. In 1722, he withdrew to France, and continued abroad almoſt ten years. At his return in 1732, he publiſhed a fine edition of his works in 2 vols quarto. He died in 1735, leaving no male iſſue.

GRANVILLE, a ſea-port town of France, in Lower Normandy, partly ſeated on a rock and partly on a plain. It gave the title to an Engliſh earl, now extinct. W. Long. 1. 32. N. Lat. 48. 58.

GRANULATED, ſomething that has undergone granulation. See the next article.

GRANULATION, in chemiſtry, an operation by which metallic ſubſtances are reduced into ſmall grains, or roundiſh particles; the uſe of which is, to facilitate their combination with other ſubſtances.—This operation is very ſimple; it conſiſts only in pouring a melted metal ſlowly into a veſſel filled with water, which is in the mean time to be agitated with a broom. With melted copper, however, which is apt to explode with great violence on the contact of water, ſome precautions are to be obſerved, of which an account is given under the article CHEMISTRY, nº 1148. Lead or tin may be granulated by pouring them when melted into a box; the internal ſurface of which is to be rubbed with powdered chalk, and the box ſtrongly ſhaken till the lead has become ſolid. Metals are granulated, becauſe their ductility renders them incapable of being pounded, and becauſe filing is long and tedious, and might render the metal impure by an admixture of iron from the file.

GRAPE, the fruit of the vine. See VINE and WINE. See alſo CURRANTS and RAISINS.

GRAPE-Shot, in artillery, is a combination of ſmall ſhot, put into a thick canvas bag, and corded ſtrongly together, ſo as to form a kind of cylinder, whoſe diameter is equal to that of the ball adapted to the cannon. The number of ſhot in a grape varies according to the ſervice or ſize of the guns: in ſea-ſervice nine is always the number; but by land it is increaſed to any number or ſize, from an ounce and a quarter in weight to three or four pounds. In ſea-ſervice the bottoms and pins are made of iron, whereas thoſe uſed by land are of wood.

GRAPES, in the manege, a term uſed to ſignify the arreſts or mangy tumours that happen in the horſe's legs.

GRAPHOMETER, a mathematical inſtrument, otherwiſe called a *Semicircle;* the uſe of which is to obſerve any angle whoſe vertex is at the centre of the inſtrument in any plane (though it is moſt commonly horizontal, or nearly ſo), and to find how many degrees it contains. See GEOMETRY, p. 674, prop. xi. &c.

GRAPNEL, or GRAPPLING, a ſort of ſmall anchor, fitted with four or five flukes or claws, and commonly uſed to ride a boat or other ſmall veſſel.

Fire-GRAPPLING, an inſtrument nearly reſembling the former, but differing in the conſtruction of its flukes, which are furniſhed with ſtrong barbs on their points. Theſe machines are uſually fixed on the yard-arms of a ſhip, in order to grapple any adverſary whom ſhe intends to board. They are, however, more particularly uſeful in *FIRE-Ships* for the purpoſes deſcribed in that article.

GRASS, in botany, is defined to be a plant having ſimple leaves, a ſtem generally jointed and tubular, a huſky calyx (called *gluma*), and the ſeed ſingle. Hence wheat, oats, barley, &c. are properly graſſes, according to the definition given; while clover and ſome other ſimilar plants are not graſſes, though ſo frequently called by that name.—Of graſs, the leaves are food for cattle, the ſmall ſeeds for birds, and the larger grain chiefly for man. And it is obſervable, that nature has ſo provided, that cattle (in grazing) ſeldom eat the flower intended to produce ſeed, unleſs compelled by hunger.

For the culture of the different ſorts of grain, ſee AGRICULTURE, nº 122. *& ſeq.*; and for that of the graſſes commonly ſo called, ſee the ſame article, nº 175, *& ſeq.* and the references below.

Culmiferous graſſes might be divided into two general claſſes for the purpoſes of the farmer, that it might be of uſe for him to attend to, viz. 1ſt, Thoſe which, like the common annual kinds of corn, run chiefly to ſeed-ſtalks; the leaves gradually decaying as theſe advance towards perfection, and becoming totally withered or falling off entirely when the ſeeds are ripe. Rye-graſs belongs to this claſs in the ſtricteſt ſenſe. To it likewiſe may be aſſigned the vernal-graſs, dog's-tail graſs, and fine bent-graſs. 2dly, Thoſe whoſe leaves continue to advance even after the ſeed-ſtalks are formed, and retain their verdure and ſucculence during the whole ſeaſon, as is the caſe with the feſcue and poa tribes of graſſes, whoſe leaves are as green and ſucculent when the ſeeds are ripe and the flower-ſtalks fading, as at any other time.

"It is wonderful, Mr Stillingfleet * remarks, to ſee how long mankind have neglected to make a proper advantage of plants of ſuch importance, and which, in almoſt every country, are the chief food of cattle. The farmer, for want of diſtinguiſhing and ſelecting graſſes for ſeed, fills his paſtures either with weeds or bad or improper graſſes; when, by making a right choice, after ſome trials, he might be ſure of the beſt graſs, and in the greateſt abundance that his land admits of. At preſent, if a farmer wants to lay down his land to graſs, what does he do? he either takes his ſeeds indiſcriminately from his own foul hay-rick, or ſends to his next neighbour for a ſupply. By this means, beſides a certain mixture of all ſorts of rubbiſh, which muſt neceſſarily happen, if he chances to have a large proportion of good ſeeds, it is not unlikely but that what he intends for dry land may come from moiſt, where it grew naturally, and the contrary. This is ſuch a ſlovenly method of proceeding, as one would think could not poſſibly prevail univerſally: yet this is the caſe as to all graſſes except the darnel-graſs, and what is known in ſome few counties by the name of the *Suffolk-graſs;* and this latter inſtance is owing, I believe, more to the ſoil than any care of the huſbandman. Now, would the farmer be at the pains of ſeparating once in his life half a pint or a pint of the different kinds of graſs-ſeeds, and take care to ſow them ſeparately, in a very little time he would have wherewithal to ſtock his farm properly, according to the nature of each ſoil, and might at the ſame time ſpread theſe ſeeds ſeparately over the country, by ſupplying the ſeed-ſhops. The number of graſſes fit for the farmer is, I believe, ſmall, perhaps half a dozen or half a ſcore are all he need to cultivate; and how ſmall the trouble would be of ſuch a taſk, and how great the benefit, muſt be obvious to every one at firſt ſight. Would not any one be looked on as wild who ſhould ſow wheat, barley, oats, rye, peaſe, beans, vetches, buck-wheat, turnips, and weeds of all ſorts together? yet how is it much leſs abſurd to do what is equivalent in relation to graſſes? Does it not import the farmer to have good hay and graſs in plenty? and will cattle thrive equally on all ſorts of food? We know the contrary. Horſes will ſcarcely eat hay that will do well enough for oxen and cows. Sheep are particularly fond of one ſort of graſs, and fatten upon it faſter than any other, in Sweden, if we may give credit to Linnæus. And may they not do the ſame in other countries? How ſhall we know till we have tried?"

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* *Tracts relating to Nat. Hiſt.* &c.

As the generality of farmers know ſcarce any of the graſſes by name, and as without ſuch knowledge little improvement can be made in this branch of huſbandry, we have on Plate CCXXIII. given figures of thoſe ſorts which have been recommended as the moſt profitable, viz.

1. *Hordeum murinum,* RYE-GRASS *vulgo.* [Rye-graſs *propriè* is the SECALE *villoſum.* Perennial darnel, *lollium perenne,* is alſo, in ſome counties of England, improperly called *rye-graſs.*] See AGRICULTURE, n° 179.

2. *Feſtuca rubra,* PURPLE FESCUE-GRASS. See AGRICULTURE, n° 54.

3. *Feſtuca ovina,* SHEEPS ditto. See AGRICULTURE, n° 56—58. This is perhaps the moſt valuable graſs of all. It is obſerved to grow and thrive on lands of all qualities and in all ſituations, from the drieſt upland paſtures to the very moiſt parts of meadows. It does not part with its ſeeds till ſome time after they are ripe, and even quite dry. It makes the thickeſt and cloſeſt pile of any of them, and ſends up but few flower-ſtalks in proportion to its leaves. It flowers in June, and is ripe in July.

4. *Holcus lanatus,* CREEPING SOFT-GRASS. See AGRICULTURE, n° 59.

5. *Alopecurus bulboſus,* BULBOUS FOXTAIL-GRASS, is recommended by Dr Anderſon †, as promiſing on ſome occaſions to afford a valuable paſture-graſs. It ſeems chiefly, he obſerves, to delight in a moiſt ſoil, and therefore promiſes to be only fit for a meadow paſture graſs. The quality that firſt recommended it to his notice, was the unuſual firmneſs that its matted roots gave to the ſurface of the ground, naturally ſoft and moiſt, in which it grew; which ſeemed to promiſe that it might be of uſe upon ſuch ſoils, chiefly in preventing them from being much poached by the feet of cattle which might paſture upon them. Moſſy ſoils eſpecially are ſo much hurt by poaching, that any thing that promiſes to be of uſe in preventing it deſerves to be attended to.

6. *Poa pratenſis,* GREAT MEADOW GRASS, ſeems to approach in many reſpects to the nature of the purple-feſcue; only that its leaves are broader, and not near ſo long; being only about a foot or 16 inches at their greateſt length. Like it, it produces few ſeed-ſtalks and many leaves, and is an abiding plant. It affects chiefly the dry parts of meadows, though it is to be found on moſt good paſtures. It is very retentive of its ſeeds, and may therefore be ſuffered to remain till the ſtalks are quite dry. It bloſſoms the beginning of June, and it ſeeds are ripe in July.

7. *Poa compreſſa,* CREEPING MEADOW-GRASS, according to Dr Anderſon, ſeems to be the moſt valuable graſs of any of this genus. Its leaves are firm and ſucculent, of a dark Saxon-green colour; and grow ſo cloſe upon one another, as to form the richeſt pile of paſture-graſs. The flower-ſtalks, if ſuffered to grow, appear in ſufficient quantities; but the growth of theſe does not prevent the growth of the leaves, both advancing together during the whole ſummer; and when the ſtalks fade, the leaves continue as green as before. Its leaves are much larger and more abundant than the common meadow-graſs, *poa trivialis;* and therefore it better deſerves to be cultivated.

8. *Anthoxanthum odoratum,* VERNAL GRASS, grows very commonly on dry hills, and likewiſe on ſound rich meadow-land. It is one of the earlieſt graſſes we have; and from its being found on ſuch kinds of paſtures as ſheep are fond of, and from whence excellent mutton comes, it is moſt likely to be a good graſs for ſheep-paſtures. It gives a grateful odour to hay. In one reſpect, it is very eaſy to gather, as it ſheds its ſeeds upon the leaſt rubbing. A correſpondent of the Bath Society, however, mentions a difficulty that occurs in collecting them, owing to its being ſurrounded with taller graſſes at the time of its ripening, and being almoſt hid among them. If it be not carefully watched when nearly ripe, he obſerves, and gathered within a few days after it comes to maturity, great part of the ſeed will be loſt. The twiſted elaſtic awns, which adhere to the ſeed, lift them out of their receptacles with the leaſt motion from the wind, even while the ſtraw and ear remain quite erect. It is found moſtly in the moiſt parts of meadows; very little of it on dry paſtures. It flowers about the beginning of May, and is ripe about the middle of June.

9. *Cynoſurus criſtatus,* CRESTED DOG'S-TAIL GRASS. Mr Stillingfleet imagines this graſs to be proper for parks, from his having known one, where it abounds, that is famous for excellent veniſon. He recommends it alſo, from experience, as good for ſheep; the beſt mutton he ever taſted, next to that which comes from hills where the purple and ſheeps feſcue, the fine bent and the ſilver hair graſſes abound, having been from ſheep fed with it. He adds, that it makes a very fine turf upon dry ſandy or chalky ſoils: but unleſs ſwept over with the ſcythe, its flowering-ſtems will look brown;

† *Eſſays on Agriculture,* &c.

brown; which is the caſe of all graſſes which are not fed on by variety of animals. For that ſome animals will eat the flowering-ſtems is evident by commons, where ſcarcely any parts of graſſes appear but the radical leaves. This graſs is ſaid to be the eaſieſt of the whole groupe to collect a quantity of ſeed from. It flowers in June, and is ripe in July.

10. *Stipa pennata*, COCK'S-TAIL OR FEATHER GRASS.

11. *Agroſtis capillaris*, FINE BENT, is recommended by Mr Stillingfleet, from his having always found it in great plenty on the beſt ſheep paſtures, in the different counties of England that are remarkable for good mutton. This graſs flowers and ripens its ſeed the lateſt of them all. It ſeems to be loſt the former part of the year, but vegetates luxuriantly towards the autumn. It appears to be fond of moiſt ground. It retains its ſeed till full ripe; flowers the latter end of July, and is ripe the latter end of Auguſt.

12. *Areira flexuoſa*, MOUNTAIN HAIR.

13.—— *caryophillea*, SILVER HAIR.

The ſame may be ſaid of theſe two graſſes as of the preceding one.

14. *Feſtuca fluitans*, FLOTE FESCUE. In a piece publiſhed in the Amœnitates Academicæ, vol. 3. intitled *Plantæ Eſculentæ*, we are informed, that "the ſeeds of this graſs are gathered yearly in Poland, and from thence carried into Germany; and ſometimes into Sweden, and ſold under the name of *manna ſeeds*. Theſe are much uſed at the tables of the great, on account of their nouriſhing quality and agreeable taſte. It is wonderful (adds the author), that amongſt us theſe ſeeds have hitherto been neglected, ſince they are ſo eaſily collected and cleanſed." There is a clammineſs on the ear of the flote-feſcue, when the ſeeds are ripe, that taſtes like honey; and for this reaſon perhaps they are called *manna ſeeds*.

Linnæus (*Flor. Seuc.* art. 95.) ſays that the bran of this graſs will cure horſes troubled with botts, if kept from drinking for ſome hours.

Concerning this graſs we have the following information by Mr Stillingfleet. "Mr Dean, a very ſenſible farmer at Ruſcomb, Berkſhire, aſſured me that a field, always lying under water, of about four acres, that was occupied by his father when he was a boy, was covered with a kind of graſs, that maintained five farm-horſes in good heart from April to the end of harveſt, without giving them any other kind of food, and that it yielded more than they could eat. He, at my deſire, brought me ſome of the graſs, which proved to be the flote-feſcue with a mixture of the marſh-bent; whether this laſt contributes much towards furniſhing ſo good paſture for horſes, I cannot ſay. They both throw out rooots at the joints of the ſtalks, and therefore are likely to grow to a great length. In the index of dubious plants at the end of Ray's Synopſis, there is mention made of a graſs under the name of *gramen caninum ſupinum longiſſimum*, growing not far from Saliſbury, 24 feet long. This muſt by its length be a graſs with a creeping ſtalk; and that there is a graſs in Wiltſhire growing in watery meadows, ſo valuable, that an acre of it lets from 10 to 12 pounds, I have been informed by ſeveral perſons. Theſe circumſtances incline me think it muſt be the flote-feſcue; but whatever graſs it be, it certainly muſt deſerve to be inquired after."

15. *Alopecurus pratenſis*, MEADOW FOXTAIL. Linnæus ſays that this is a proper graſs to ſow on grounds that have been drained.—Mr Stillingfleet was informed, that the beſt hay which comes to London is from the meadows where this graſs abounds. It is ſcarce in many parts of England, particularly Herefordſhire, Berkſhire, and Norfolk. It might be gathered at almoſt any time of the year from hay ricks, as it does not ſhed its ſeeds without rubbing, which is the caſe of but few graſſes. It is amongſt the moſt grateful of all graſſes to cattle. It is ripe about the latter end of June.

16. *Poa annua*, ANNUAL MEADOW GRASS. "This graſs (ſays Mr Stillingfleet) makes the fineſt of turfs. It grows every where by way ſides, and on rich ſound commons. It is called in ſome parts the *Suffolk graſs*. I have ſeen whole fields of it in High Suffolk without any mixture of other graſſes; and as ſome of the beſt ſalt-butter we have in London comes from that county, it is moſt likely to be the beſt graſs for the dairy. I have ſeen a whole park in Suffolk covered with this graſs; but whether it affords good veniſon, I cannot tell, having never taſted of any from it. I ſhould rather think not, and that the beſt paſture for ſheep is alſo the beſt for deer. However, this wants trial. I remarked on Malvern-hill ſomething particular in relation to this graſs. A walk that was made there for the convenience of the water drinkers, in leſs than a year was covered in many places with it, though I could not find one ſingle plant of it beſides in any part of the hill. This was no doubt owing to the frequent treading, which above all things makes this graſs flouriſh; and therefore it is evident that rolling muſt be very ſerviceable to it. It has been objected, that this graſs is not free from *bents*, by which word is meant the flowering-ſtems. I anſwer, that this is moſt certainly true, and that there is no graſs without them. But the flowers and ſtems do not grow ſo ſoon brown as thoſe of other graſſes; and being much ſhorter, they do not cover the radical leaves ſo much; and therefore this graſs affords a more agreeable turf without mowing, than any other whatever that I know of."—The ſeeds of this ſpecies drop off before they are dry, and, to appearance, before they are ripe. The utmoſt care is therefore neceſſary in gathering the blades, without which, very few of the ſeeds will be ſaved. It ripens from the middle of April, to ſo late, it is believed, as the end of October; but moſtly diſappears in the middle of the ſummer. It grows in any ſoil and ſituation, but rather affects the ſhade.

17. A new graſs from America (named *Agroſtis cornucopiæ*) was ſome time ago much advertiſed and extolled, as poſſeſſing the moſt wonderful qualities, and the ſeeds of it were ſold at the enormous rate of L. 68 the buſhel. But we have not heard that it has at all anſwered expectation. On the contrary, we are informed by Dr Anderſon in his new publication †, that "it has upon trial been found to be good for nothing. Of the ſeeds ſown, few of them ever germinated: but enow of plants made their appearance, to aſcertain, that the graſs, in reſpect of quality, is among the pooreſt of the tribe; and that it is an *annual* plant, and altogether unprofitable to the farmer."

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† *The Bee*, vol. 1. p. 38.

Graſs-Walks are made, for the moſt part, not by ſowing graſs ſeeds, but by laying turfs; and indeed the turfs from a fine common or down are much preferable to ſown graſs: but if walks or plats are to be made by ſowing, the beſt way is to procure the ſeed from thoſe paſtures where the graſs is naturally fine and clear; or elſe the trouble of keeping it from ſpiry or benty graſs will be very great, and it will ſcarce ever look handſome.

In order to ſow graſs walks, the ground muſt be firſt dug; and when it has been dreſſed and laid even, it muſt be very carefully raked over, and all the clods and ſtones taken off, and then covered over an inch thick with good mould.

This being done, the ſeed is to be ſown pretty thick, that it may come up cloſe and ſhort; it muſt then be raked over again, to cover the ſeed, that if the weather ſhould happen to be windy, it may not be blown away. It ought alſo to be obſerved, that where graſs is ſown in gardens, either for lawns or walks, there ſhould always be a good quantity of the white trefoil or Dutch clover ſown with it; for this will make a fine turf much ſooner than any other ſown graſs, and will continue a better verdure than any other of the graſs-tribe.

In order to keep graſs-plats or walks handſome, and in good order, you may ſow in autumn freſh ſeed over any places that are not well filled, or where the graſs is dead: but nothing improves graſs ſo much as mowing and conſtant rolling.

When turf is laid in gardens, it is a general practice to cover the ſurface of the ground under the turf, either with ſand or very poor earth: the deſign of this is to keep the graſs fine, by preventing its growing too rank. This is proper enough for very rich ground: but it is not ſo for ſuch land as is middling, or but poor; for when this is practiſed in ſuch places, the graſs will ſoon wear out and decay in patches.

When turf is taken from a common or down, ſuch ought to be choſen as is free from weeds: and when it is deſigned to remain for years without renewing, a dreſſing ſhould be laid upon it every other year, either of very rotten dung, aſhes, or, where it can be eaſily procured, very rotten tan; but theſe dreſſings ſhould be laid on early in the winter, that the rain may waſh them into the ground, otherwiſe they will occaſion the graſs to burn, when the warmth of the ſummer begins.

When graſs is ſo dreſſed, and well rolled and mowed, it may be kept very beautiful for many years; but where it is not dreſſed, or fed with ſheep, it will rarely continue handſome more than eight or ten years.

GRASSHOPPER, in zoology, a ſpecies of gryllus. See Gryllus.

GRATAROLUS (William), a learned phyſician in the 16th century, was born at Bergamo in Italy; and taught phyſic with reputation at Padua: but having embraced the Proteſtant religion, he retired to Switzerland; where he was made profeſſor of phyſic. He died at Baſil in 1568, aged 52. He wrote ſeveral curious works in Latin; amongſt which are, 1. The manner of preſerving and improving the memory. 2. Of preſerving in health travellers, men of letters, magiſtrates, and ſtudious perſons, &c.

GRATES for Fires, are compoſed of ribs of iron placed at ſmall diſtances from one another, ſo that the air may have ſufficient acceſs to the fuel, and the accumulation of the aſhes, which would choke the fire, may be prevented.—Grates ſeem peculiarly adapted to the uſe of pit-coal, which requires a greater quantity of air to make it burn freely than other kinds of fuel. The hearths of the Britons ſeem to have been fixed in the centre of their halls, as is yet practiſed in ſome parts of Scotland, where the fire is nearly in the middle of the houſe, and the family ſit all around it. Their fire place was perhaps nothing more than a large ſtone, depreſſed a little below the level of the ground, and thereby adapted to receive the aſhes. About a century ago, it was only the floor of the room, with the addition of a bauk or hob of clay. But it was now changed among the gentlemen for a portable fire-pan, raiſed upon low ſupporters, and fitted with a circular grating of bars. Such were in uſe among the Gauls in the firſt century, and among the Welſh in the tenth.

GRATIAN, the ſon of Valentinian I. by his firſt wife, was declared Auguſtus by his father at the city of Amiens in 365, and ſucceeded him in 367; a prince equally extolled for his wit, eloquence, modeſty, chaſtity, and zeal againſt heretics. He aſſociated Theodoſius with him in the empire, and advanced the poet Auſonius to the conſulate. He made a great ſlaughter of the Germans at Straſburg *, and hence was ſurnamed *Alemannicus*. He was the firſt emperor who refuſed the title of *Pontifex Maximus*, upon the ſcore of its being a Pagan dignity. He was aſſaſſinated by Andragathius in 375, in the 24th year of his age.

* See *Argentora*.

Gratian, a famous Benedictine monk, in the 12th century, was born at Chiuſi, and employed near twenty four years in compoſing a work, intitled *Decretum*, or *Concordantia Diſcordantium Canonum*, becauſe he there endeavoured to reconcile the canons which ſeemed contradictory to each other. This work he publiſhed in 1151. As he is frequently miſtaken, in taking one canon of one council, or one paſſage of one father, for another, and has often cited falſe decretals, ſeveral authors have endeavoured to correct his faults; and chiefly Anthony Auguſtine, in his excellent work, intitled, *De emendatione Gratiani*. To the decretals of Gratian, the popes principally owed the great authority they exerciſed in the thirteenth and following centuries.

GRATINGS, in a ſhip, are ſmall edges of ſawed plank, framed one into another like a lattice or priſon grate, lying on the upper deck, between the main-maſt and fore-maſt, ſerving for a defence in a cloſe fight, and alſo for the coolneſs, light, and conveniency of the ſhip's company.

GRATIOLA, HEDGE HYSSOP: A genus of the monogynia order, belonging to the diandria claſs of plants. The corolla is irregular; there are two barren ſtamina; the capſule is bilocular; the calyx has ſeven leaves, with the two exterior ones patulous. There are four ſpecies; the moſt remarkable of which is the officinalis, or common hedge-hyſſop. This grows naturally on the Alps and other mountainous parts of Europe. It hath a thick, fleſhy, fibrous, creeping root, which propagates very much, when planted in a proper ſoil and ſituation. From this ariſe ſeveral upright ſquare ſtalks, garniſhed with narrow ſpear-ſhaped leaves, placed oppoſite. The flowers are produced on the ſide of the ſtalks at each joint; they are ſhaped like thoſe of the fox-glove, but are ſmall, and of a pale yellowiſh colour.—This herb has an emetic and purgative virtue; to anſwer which intentions, it was formerly uſed by the common people in England, but was never much preſcribed by the phyſicians, and at laſt fell totally into diſuſe. Of late however, it has been the ſubject of a diſſertation by Dr James Koſtrzewſki of Warſaw, in Poland; who gives ſome remarkable accounts of its effects in mania and obſtinate venereal caſes. It was given in powder, or in extract, to the quantity of half a drachm of the firſt, and a whole drachm of the ſecond, at each doſe. From the caſes related in his diſſertation, the author draws the following concluſions: 1. The gratiola may be given with ſafety both to male and female patients. 2. In all diſorders proceeding from a ſuperabundance of ſerum in the fluids, it appears to be a moſt effectual remedy. 3. In conſequence of this, it is had recourſe to with very great advantage in melancholy and mania ariſing from that ſtate of the ſyſtem. 4. It powerfully promotes purging, vomiting, ſweat, and urine; and is therefore much ſuperior to any of the uſual evacuating medicines, moſt of which prove only active in promoting one of theſe diſcharges at once. 5. The moſt obſtinate caſes of gonorrhœa, fluor albus, and venereal ulcers, are cured by the powder.—In ſome inſtances it has induced ſalivation; but whether or not it can always be made to produce that effect, is not as yet altogether certain. 6. The powder of gratiola prepared from the extract, and exhibited with ſugar, does not induce vomiting; and, on the contrary, the powder of the root always promotes that evacuation.

GRATITUDE, in ethics, a virtue diſpoſing the mind to an inward ſenſe and outward acknowledgment of benefits received.

Examples of ingratitude, Mr Paley obſerves, check and diſcourage voluntary beneficence; hence the cultivation of a grateful temper is a conſideration of public importance. A ſecond reaſon for cultivating in ourſelves that temper is: That the ſame principle which is touched with the kindneſs of a human benefactor, is capable of being affected by the divine goodneſs, and of becoming, under the influence of that affection, a ſource of the pureſt and moſt exalted virtue. The love of God is the ſublimeſt gratitude. It is a miſtake therefore, to imagine, that this virtue is omitted in the Scriptures; for every precept, which commands us ‘to love God becauſe he firſt loved us,’ preſuppoſes the principle of gratitude, and directs it to its proper object.

It is impoſſible to particularize the ſeveral expreſſions of gratitude, which vary with the character and ſituation of the benefactor, and with the opportunities of the perſon obliged; for this variety admits of no bounds. It may be obſerved, however, that on one part gratitude can never oblige a man to do what is wrong, and what by conſequence he is previouſly obliged not to do: On the other part, it argues a total want of every generous principle, as well as of moral probity, to take advantage of that aſcendency, which the conferring of benefits juſtly creates, to draw or drive thoſe whom we have obliged into mean or diſhoneſt compliances.

The following pleaſing example of genuine gratitude is extracted from *Hackwel's Apol.* l. 14. c. 10. p. 436.—Francis Freſcobald, a Florentine merchant deſcended of a noble family in Italy, had gained a plentiful fortune, of which he was liberal handed to all in neceſſity; which being well known to others, though concealed by himſelf, a young ſtranger applied to him for charity. Signior Freſcobald, ſeeing ſomething in his countenance more than ordinary, overlooked his tattered clothes; and compaſſionating his circumſtances, aſked him “What he was, and of what country?” “I am (anſwered the young man) a native of England; my name is Thomas Cromwell, and my father-in-law is a poor ſheer-man. I left my country to ſeek my fortune; came with the French army that were routed at Gatylion, where I was a page to a footman, and carried his pike and burgonet after him.” Freſcobald commiſerating his neceſſities, and having a particular reſpect for the Engliſh nation, clothed him genteelly; took him into his houſe till he had recovered ſtrength by better diet; and, at his taking leave, mounted him upon a good horſe, with 16 ducats of gold in his pockets. Cromwell expreſſed his thankfulneſs in a very ſenſible manner, and returned by land towards England; where, being arrived, he was preferred into the ſervice of Cardinal Woolſey. After the Cardinal's death, he worked himſelf ſo effectually into the favour of King Henry VIII. that his majeſty made him a baron, viſcount, earl of Eſſex, and at laſt made him lord high chancellor of England. In the mean time, Signior Freſcobald, by repeated loſſes at ſea and land, was reduced to poverty; and calling to mind (without ever thinking of Cromwell), that ſome Engliſh merchants were indebted to him in the ſum of 15,000 ducats, he came to London to procure payment. Travelling in purſuit of this affair, he fortunately met with the lord chancellor as he was riding to court; who thinking him to be the ſame gentleman that had done him ſuch great kindneſs in Italy, he immediately alighted, embraced him, and with tears of joy aſked him, If he was not Signior Francis Freſcobald, a Florentine merchant? “Yes, Sir (ſaid he), and your moſt humble ſervant.” “My ſervant! (ſaid the Chancellor) No; you are my ſpecial friend, that relieved me in my wants, laid the foundation of my greatneſs, and, as ſuch, I receive you; and, ſince the affairs of my ſovereign will not now permit a longer conference, I beg you will oblige me this day with your company at my houſe to dinner with me.” Signior Freſcobald was ſurpriſed and aſtoniſhed with admiration who this great man ſhould be that acknowledged ſuch obligations, and ſo paſſionately expreſſed a kindneſs for him: but, contemplating a while his voice, his mein, and carriage; he concludes it to be Cromwell, whom he had relieved at Florence; and therefore not a little overjoyed, goes to his houſe, and attended his coming. His lordſhip came ſoon after; and immediately taking his friend by the hand, turns to the lord high admiral and other noblemen in his company, ſaying, “Don't your lordſhips wonder that I am ſo glad to ſee this gentleman? This is he who firſt contributed to my advancement.” He then told them the whole ſtory; and, holding him ſtill by the hand, led him into the dining-room, and placed him next himſelf at table. The company being gone, the Chancellor made uſe of this opportunity to know what affair had brought him into England. Freſcobald in a few words gave him the true ſtate of his circumſtances: To which Cromwell replied, "I am ſorry for your misfortunes, and I will make them as eaſy to you as I can; but, becauſe men ought to be juſt before they are kind, it is fit I ſhould repay the debt I owe you." Then leading him into his cloſet, he locked the door; and opening a coffer, firſt took out 16 ducats, delivering them to Freſcobald, and ſaid, "My friend, here is the money you lent me at Florence, with ten pieces you laid out for my apparel, and ten more you paid for my horſe; but conſidering you are a merchant, and might have made ſome advantage by this money in the way of trade, take theſe four bags, in every one of which is 400 ducats, and enjoy them as the free gift of your friend." Theſe the modeſty of Freſcobald would have refuſed, but the other forced them upon him. He next cauſed him to give him the names of all his debtors, and the ſums they owed: which account he tranſmitted to one of his ſervants, with a charge to find out the men, and oblige them to pay him in 15 days under the penalty of his diſpleaſure; and the ſervant ſo well diſcharged his duty, that in a ſhort time the entire ſum was paid. All this time Signior Freſcobald lodged in the Chancellor's houſe, where he was entertained according to his merits, with repeated perſuaſions for his continuance in England, and an offer of the loan of 60,000 ducats for four years if he would trade here: but he deſired to return to Florence, which he did, with extraordinary favours from the Lord Cromwell.

There is a ſpecies of grateful remorſe, which ſometimes has been known to operate forcibly on the minds of the moſt hardened in impudence. Of this Mr Andrews, who makes the remark, gives an inſtance in the following anecdote, ſaid to have been a favourite one with the late Dr Campbell. "Towards the beginning of this century, an actor, celebrated for mimicry, was to have been employed by a comic author, to take off the perſon, the manner, and the ſingularly aukward delivery of the celebrated Dr Woodward, who was intended to be introduced on the ſtage in a laughable character, (viz. in that of *Dr Foſſile*, in Three Hours after Marriage). The mimic dreſſed himſelf as a country man, and waited on the Doctor with a long catalogue of ailments, which he ſaid attended on his wife. The phyſician heard with amazement diſeaſes and pains of the moſt oppoſite nature, repeated and redoubled on the wretched patient. For, ſince the actor's greateſt wiſh was to keep Dr Woodward in his company as long as poſſible, that he might make the more obſervations on his geſtures, he loaded his poor imaginary ſpouſe with every infirmity which had any probable chance of prolonging the interview. At length, being become completely maſter of his errand, he drew from his purſe a guinea, and, with a ſcrape, made an uncouth offer of it. 'Put up thy money, poor fellow' (cried the Doctor); 'thou haſt need of all thy caſh and all thy patience too, with ſuch a bundle of diſeaſes tied to thy back.' The actor returned to his employer, and recounted the whole converſation, with ſuch true feeling of the phyſician's character, that the author ſcreamed with approbation. His raptures were ſoon checked; for the mimic told him, with the emphaſis of ſenſibility, that he would ſooner die than proſtitute his talents to the rendering ſuch genuine humanity a public laughing ſtock. The player's name was *Griffin*."

GRATZ, a handſome ſtrong town of Germany, and capital of Styria, with a caſtle ſeated on a rock, and an univerſity. The Jeſuits have a college here; and there are a great number of handſome palaces, and a fine arſenal. The caſtle ſtands on a very lofty hill, and communicates with the river by means of a deep well. The empreſs-dowager was obliged to retire hither during the war of 1741 and 1742. It is ſeated on the river Muer, in E. Long. 16. 25. N. Lat. 47. 4.

GRATIUS, a Latin poet, cotemporary with Ovid, the author of a poem intitled *Cynegeticon*, or the *Manner of hunting with dogs*; the beſt edition of which is that of Leyden, 12mo, with the learned notes of Janus Ulitius.

GRAVE, in grammar, a ſpecies of accent oppoſite to acute. The grave accent is expreſſed thus (\`); and ſhows, that the voice is to be depreſſed, and the ſyllable over which it is placed pronounced in a low deep tone.

GRAVE, in muſic, is applied to a ſound which is in a low or deep tone. The thicker the chord or ſtring, the more grave the tone or note, and the ſmaller the acuter. Notes are ſuppoſed to be the more grave, in proportion as the vibrations of the chord are leſs quick.

GRAVE, in the Italian muſic, ſerves to denote the ſloweſt movement.

GRAVE is alſo uſed for a tomb, wherein a perſon defunct is interred.

Graves, among the Jews, were generally out of the city, though we meet with inſtances of their interring the dead in towns. Frequent mention is made of graves upon mountains, in highways, in gardens, and private houſes. So that nothing on this head ſeems to have been determined. The ſame may be obſerved with reſpect to the Greeks. The Thebans had a law that every perſon who built an houſe ſhould provide a burial ground. Men who had diſtinguiſhed themſelves were frequently buried in the public forum. The moſt general cuſtom was, however, to bury out of the city, chiefly by the highway ſide. The Romans were forbidden by the law of the 12 tables to bury or to burn the dead in the city; but ſome we find had their ſepulchres in Rome, though they paid a fine for the indulgence.

GRAVE, a very ſtrong town of the Netherlands, in Dutch Brabant, ſeated on the river Maeſe, beyond which there is a fort. E. Long. 5. 41. N. Lat. 51. 46.

GRAVEL, in natural hiſtory and gardening, a congeries of pebbles, which, mixed with a ſtiff loam, makes laſting and elegant gravel-walks; an ornament peculiar to Britiſh gardens, and which gives them an advantage over thoſe of other nations.

GRAVEL, in medicine. See the Index ſubjoined to that article; and ſee ALKALI, n° 17.

GRAVEL-Walks. To make theſe properly, the bottom ſhould be laid with lime-rubbiſh, large flint-ſtones, or any other hard matter, for eight or ten inches thick, to keep weeds from growing through, and over this the gravel is to be laid ſix or eight inches thick. This ſhould be laid rounding up in the middle, by which means the larger ſtones will run off to the ſides, and may be raked away; for the gravel ſhould never be ſcreened before it is laid on. It is a common miſtake to lay theſe walks too round, which not only makes them uneaſy to walk upon, but takes off from their apparent breadth. One inch in five feet is ſufficient proportion for the riſe in the middle; ſo that a walk of 20 feet wide ſhould be four inches higher at the middle than at the edges, and ſo in proportion. As ſoon as the gravel is laid, it ſhould be raked, and the large ſtones thrown back again: then the whole ſhould be rolled both lengthwiſe and croſſwiſe; and the perſon who draws the roller ſhould wear ſhoes with flat heels, that he may make no holes; becauſe holes made in a new walk are not eaſily remedied. The walks ſhould always be rolled three or four times in very hard ſhowers, after which they will bind more firmly than otherwiſe they could ever be made to do.

Gravel, with ſome loam among it, binds more firmly than the rawer kinds; and when gravel is naturally very harſh and ſharp, it is proper to add a mixture of loam to it. The beſt gravel for walks is ſuch as abounds with ſmooth round pebbles, which, being mixed with a little loam, are bound ſo firmly together, that they are never afterwards injured either by wet or dry weather. Theſe are not ſo liable to be turned up by the feet in walking, as the more irregularly ſhaped pebbles, and remain much more firmly in their places after rolling.

GRAVELINES, a very ſtrong ſea-port town of the Netherlands in French Flanders, with a caſtle and harbour. It was ceded to France by the treaty of the Pyrenees, and is ſeated in a marſhy country on the river Aa, near the ſea, in E. Long. 2. 13. N. Lat. 50. 59.

GRAVELLY LAND, or SOIL, that abounding with gravel or ſand, which eaſily admits of heat and moiſture; and the more ſtoney ſuch lands are, the more barren they prove.

GRAVENAC, a town of Germany, in the circle of Suabia, and capital of a county of the ſame name. E. Long. 8. 15. N. Lat. 48. 22.

GRAVER, in the art of engraving, a tool by which all the lines, ſcratches, and ſhades, are cut in copper, &c. See ENGRAVING.

GRAVESANDE (William James), was born of an ancient and honourable family at Delft in Holland, in 1688. He ſtudied the civil law at Leyden, but mathematical learning was his favourite amuſement. When he had taken his doctor's degree in 1707, he ſettled at the Hague, and practiſed at the bar, in which ſituation he cultivated an acquaintance with learned men; with a ſociety of whom, he publiſhed a periodical review intitled *Le Journal Litteraire*, which was continued without interruption from the year 1713 to the year 1722, when he died. The moſt conſiderable of his works are, "A treatiſe on perſpective: An introduction to the Newtonian philoſophy, or a treatiſe on the elements of phyſics confirmed by experiments; A treatiſe on the elements of algebra, for the uſe of young ſtudents;" and "A courſe of logic and metaphyſics." He had intended to have preſented the public with a ſyſtem of morality, but his death prevented the execution. The miniſters of the republic conſulted him on all occaſions wherein his talents were requiſite; and his ſkill in calculation was often of ſervice to them; as was his addreſs in decyphering, for detecting the ſecret correſpondence of their enemies. As profeſſor of mathematics and aſtronomy at Leyden, none ever applied the powers of nature with more ſucceſs, or to more uſeful purpoſes.

GRAVESEND, a town of Kent in England, ſituated on the banks of the Thames. It is 23 miles from London; and has a blockhouſe well mounted with cannon, to command the ſhips and river, directly oppoſite to Tilbury fort in Eſſex. The town was plundered and burnt by the French and Spaniards in the reign of Richard II. to compenſate which, the king, at the requeſt of the abbot of St Mary le-Grace of Tower-hill, to whom he had granted a manor there called *Parrocks*, veſted it and Milton with the ſole privilege of carrying paſſengers by water from hence to London at 4s. the whole fare, or 2d. a head; which was confirmed by Henry VIII.; but now the fare is 9d. a head in the tilt-boat, and 1s. in the wherry. The former muſt not take in above 40 paſſengers, the latter no more than 8. Coaches ply here at the landing of people from London, &c. to carry them to Rocheſter, at 1s. 6d. each. This town and Milton were incorporated by queen Elizabeth by the name of the *portreeve* (now the mayor), jurats, and inhabitants of Graveſend and Milton: And, as Graveſend is the place where moſt paſſengers through Kent from foreign parts take boat for London, that queen, in order to ſhow the grandeur of the metropolis of her kingdom, ordered the lord mayor, aldermen, and city companies, to receive all ambaſſadors and eminent ſtrangers here in their formalities, and to attend them to London in barges if by water; or if they chooſe to come by land, they were to meet them on horſeback on Blackheath in their livery-gowns. The towns for ſeveral miles round are ſupplied from hence with garden ſtuffs; of which great quantities are alſo ſent to London, where the aſparagus of Graveſend is preferred to that of Batterſea. All outward-bound ſhips are obliged to anchor in this road till they have been viſited by the cuſtom-houſe officers; and for this purpoſe a centinel at the block-houſe fires a muſket: but the homeward-bound all paſs by without notice, unleſs it be to put waiters on board, if they are not ſupplied before. As the outward-bound generally take in proviſions here, the place is full of ſeamen, who are all in a hurry. The whole town being burnt down in 1727, 5000l. was granted by the parliament in 1731 for rebuilding its church, as one of the 50 new ones. In 1624, one Mr Pinnock gave 21 dwelling-houſes here, beſides one for a maſter-weaver, to employ the poor; and here is a charity-ſchool for 24 boys, who are both taught and cloathed. The town-houſe was erected in 1764; and in 1772 an act of parliament empowered the inhabitants to pave and light their ſtreets.

GRAVINA, a town of Italy, in the kingdom of Naples, and Terra di Bori, with a biſhop's ſee, and the title of a duchy. E. Long. 17. N Lat. 41.

GRAVINA (John Vincent), an eminent ſcholar, and illuſtrious lawyer of Italy, born at Roggiana in

1664. He was profeſſor of the canon law in the college of Sapienzi at Rome; and though many foreign univerſities made propoſals to draw him to them, he never quitted that city, but died there in 1718. His works are both curious and uſeful; the greateſt of them is *De ortu et progreſſu Juris Civilis*. A collection of his works was printed in 4to at Leipſic in 1737, with the notes of Maſcovius.

GRAVINA (Peter), an Italian poet, much eſteemed by the great general Gonſalvo, and Proſper Colonna. He wrote, in a pure Roman ſtyle, Diſcourſes on Matters relating to the Law and to the Belles Lettres, as well as Poems. He died in 1527.

GRAVITATION, in natural philoſophy, is ſometimes diſtinguiſhed from *gravity*. Thus M. Maupertuis takes gravity for that force whereby a body would fall to the earth; but gravitation for the ſame diminiſhed by the centrifugal force. See NEWTONIAN *Philoſophy*.

GRAVITY, or GRAVITATION (for the words are moſt commonly uſed ſynonymouſly), ſignifies either the force by which bodies are preſſed towards the ſurface of the earth, or the manifeſt effect of that force; in which laſt ſenſe the word has the ſame ſignification with *weight* or *heavineſs*.

Concerning gravity in the firſt ſenſe of the word, or that active power by which all bodies are impelled towards the earth, there have been great diſputes. Many eminent philoſophers, and among the reſt Sir Iſaac Newton himſelf, have conſidered it as the firſt of all ſecond cauſes; an incorporeal or ſpiritual ſubſtance, which never can be perceived any other way than by its effects; an univerſal property of matter, &c. Others have attempted to explain the phenomena of gravitation by the action of a very ſubtile etherial fluid; and to this explanation Sir Iſaac, in the latter part of his life, ſeems not to have been averſe. He hath even given a conjecture concerning the matter in which this fluid might occaſion theſe phenomena. But for a full account of the diſcoveries of this great philoſopher concerning the laws of gravitation, the conjectures made by him and others concerning its cauſe, the various objections that have been made to his doctrine, and the ſtate of the diſpute at preſent, ſee the articles NEWTONIAN *Philoſophy* ASTRONOMY, ATMOSPHERE, EARTH, ELECTRICITY, FIRE, LIGHT, ATTRACTION, REPULSION, PLENUM, VACUUM, &c.

Specific GRAVITY, denotes the weight belonging to an equal bulk of every different ſubſtance. Thus the exact weight of a cubic inch of gold, compared with a cubic inch of water, tin, lead, &c. is called its *ſpecific gravity*. See HYDROSTATICS.

GRAUNT (John), author of a curious and celebrated book, intitled, *Natural and Political Obſervations made upon the Bills of Mortality*. He was a haberdaſher of ſmall wares; but laid down his trade, and all public employments, on account of his religion. He was educated a puritan; afterwards profeſſed himſelf a Socinian; yet in the latter part of his life declared himſelf of the Roman Catholic religion. He was a member of the royal ſociety, and died in 1674.

GRAY, or GREY, a mixed colour partaking of the two extremes, black and white. See BLACK, nº 8, 9, 10. and DYEING, nº 82, and 90.

In the manege they make ſeveral ſorts of grays; as the branded or blackened grey, which has ſpots quite black diſperſed here and there. The dappled gray, which has ſpots of a darker colour than the reſt of the body. The light or ſilver gray, wherein there is but a ſmall mixture of black hairs. The ſad or iron gray, which has but a ſmall mixture of white. And the browniſh or ſandy-coloured gray, where there are bay-coloured hairs mixed with the black.

GRAY, a town of France, in the Franche Compte, and capital of the bailiwick of Amont. It is a trading place, and ſeated on the river Saone, in E. in Long. 5. 41. N. Lat. 47. 30.

GRAY (Lady Jane). See GREY.

GRAY (Thomas), an admired Engliſh poet, was the youngeſt and only ſurviving ſon of a reputable citizen of London, and was born in Cornhill in 1716. He was educated at Eton, where he contracted a friendſhip with Mr Horace Walpole, and with Mr Richard Weſt ſon of the lord chancellor of Ireland. Mr Weſt and Mr Gray were both intended for the bar; but the former died early in life, and the latter was diverted from that purſuit by an invitation to accompany Mr Walpole in his travels; which he accepted without any determined plan for his future life. During Mr Gray's travels, he wrote a variety of letters to Mr Weſt and to his parents, which are printed with his poems; and when he returned, finding himſelf in narrow circumſtances, yet with a mind indiſpoſed for active employment, he retired to Cambridge, and devoted himſelf to ſtudy. Soon after his return, his friend Weſt died: and the melancholy impreſſed on him by this event may be traced in his admired "Elegy written in a country churchyard;" which is thought to have been begun, if not finiſhed, at this time: though the concluſion, as it ſtands at preſent, is certainly different from what it was in the firſt manuſcript copy. The firſt impulſe of his ſorrow for the death of his friend gave birth to a very tender ſonnet in Engliſh, on the Petrarchian model; and alſo to a ſublime apoſtrophe in hexameters, written in the genuine ſtrain of claſſical majeſty, with which he intended to begin one of his books *De Principiis cogitandi*.

From the winter of the year 1742, to the day of his death, his principal reſidence was at Cambridge: from which he was ſeldom abſent any conſiderable time, except between the years 1759 and 1762; when, on the opening of the Britiſh Muſeum, he took lodgings in Southampton-row, in order to have recourſe to the Harleian and other manuſcripts there depoſited, from which he made ſeveral curious extracts, amounting in all to a tolerable-ſized folio, at preſent in the hands of Mr Walpole.

About the year 1747, Mr Maſon, the editor of Mr Gray's poems, was introduced to him. The former had written, a year or two before, ſome imitations of Milton's juvenile poems, *viz.* A Monody on the death of Mr Pope, and two pieces intitled *Il Bellicoſo* and *Il Pacifico* on the peace of Aix-la-Chapelle; and the latter reviſed them, at the requeſt of a friend. This laid the foundation of an intimacy which continued without interruption to the death of Mr Gray.

About the year 1750, Mr Gray had put his laſt hand to his celebrated Elegy written in a country church-yard, and had communicated it to his friend Mr Walpole, whoſe good taſte was too much charmed

Gray.

with it to ſuffer him to with-hold the ſight of it from his acquaintance. Accordingly it was ſhown about for ſome time in manuſcript, and received with all the applauſe it ſo juſtly merited. At laſt the publiſher of one of the magazines having obtained a ſurreptitious copy of it, Mr Gray wrote to Mr Walpole, deſiring that he would put his own manuſcript into the hands of Mr Dodſley, and order him to print it immediately. This was the moſt popular of all our author's publications. It ran through eleven editions in a very ſhort ſpace of time; was finely tranſlated into Latin by by Meſſrs Anſty and Roberts; and in the ſame year by Mr Lloyd.

From July 1659 to the year 1762, he generally reſided in London, with a view, as we have already obſerved, of having recourſe to the Britiſh Muſeum. In July 1768, his grace the duke of Grafton wrote him a polite letter, informing him, that his majeſty had been pleaſed to offer to him the profeſſorſhip of Modern Hiſtory in the univerſity of Cambridge, then vacant by the death of Mr Laurence Brocket. This place was valuable in itſelf, the ſalary being 400 l. a-year; but what rendered it particularly acceptable to Mr Gray was its being given him without any ſolicitation. He was indeed remarkably diſintereſted in all his purſuits. Though his income, before this addition, was very ſmall, he never read or wrote with a view of making his labours uſeful to himſelf. He may be ſaid to have been one of thoſe few perſonages in the annals of literature, eſpecially in the poetical claſs, who are devoid of ſelf intereſt, and at the ſame time attentive to economy; and alſo was among mankind in general one of thoſe very few economiſts, who poſſeſs that talent, untinctured with the ſlighteſt ſtain of avarice. When his circumſtances were at the loweſt, he gave away ſuch ſums in private charity, as would have done credit to an ampler purſe. But what chiefly deterred him from ſeeking any advantage by his literary purſuits, was a certain degree of pride, which led him to deſpiſe the idea of being thought an author by profeſſion.

However, it is probable, that early in life he had an intention of publiſhing an edition of Strabo; for his papers contain a great number of notes and geographical diſquiſitions on that author, particularly with reſpect to that part of Aſia which comprehends Perſia and India. The indefatigable pains which he took with the writitings of Plato, and the quantity of critical as well as explanatory obſervations which he has left upon almoſt every part of his works, plainly indicate, that no man in Europe was better prepared to republiſh and illuſtrate that philoſopher than Mr Gray. Another work, on which he beſtowed uncommon labour, was the Anthologia. In an interleaved copy of that collection of Greek epigrams, he has tranſcribed ſeveral additional ones, which he ſelected in his extenſive reading; has inſerted a great number of critical notes and emendations, and ſubjoined a copious index. But whether he intended this performance for the preſs or not, is uncertain. The only work which he meditated upon with this direct view from the beginning was a hiſtory of Engliſh poetry, upon a plan ſketched out by Mr Pope. He has mentioned this himſelf in an advertiſement to thoſe three fine imitations of Norſe and Welch poetry, which he gave the world in the laſt edition of his poems. But after he had made ſome conſiderable preparations for the execution of this deſign, and Mr Maſon had offered him his aſſiſtance, he was informed, that Mr Warton, of Trinity College, Oxford, was engaged in a work of the ſame kind. The undertaking was therefore relinquiſhed, by mutual conſent; and ſoon after, on that gentleman's deſiring a ſight of the plan, our author readily ſent him a copy of it.

Among other ſciences, Mr Gray had acquired a great knowledge of Gothic architecture. He had ſeen and accurately ſtudied in his youth, while abroad, the Roman proportions on the ſpot, both in ancient times, and in the works of Palladio. In his later years he applied himſelf to conſider thoſe ſtupendous ſtructures of more modern date that adorned his own country; which, if they have not the ſame grace, have undoubtedly equal dignity. He endeavoured to trace this mode of building from the time it commenced through its various changes, till it arrived at its perfection in the reign of Henry VIII. and ended in that of Elizabeth. For this purpoſe, he did not ſo much depend upon written accounts, as that internal evidence which the buildings themſelves give of their reſpective antiquity; ſince they conſtantly furniſh to the well informed eye, arms, ornaments, and other marks, by which their ſeveral ages may be aſcertained. On this account he applied himſelf to the ſtudy of heraldry as a preparatory ſcience; and has left behind him a number of genealogical papers, more than ſufficient to prove him a complete maſter of it. By theſe means he arrived at ſo very extraordinary a pitch of ſagacity, as to be enabled to pronounce, at firſt ſight, on the preciſe time when every particular part of any cathedral was erected. But the favourite ſtudy of Mr Gray for the laſt ten years of his life was natural hiſtory, which he then rather reſumed than began; as by the inſtructions of his uncle Antrobus, he was a conſiderable botaniſt at 15. The marginal notes which he has left on Linnæus and other writers on the vegetable, animal, and foſſile kingdoms, are very numerous: but the moſt conſiderable are on Hudſon's Flora Anglica, and the tenth edition of the *Syſtema Naturæ*; which latter he interleaved and filled almoſt entirely. While employed on zoology, he read Ariſtotle's treatiſe on that ſubject with great care, and explained many difficult paſſages of that obſcure ancient by the lights he had received from modern naturaliſts. In a word, excepting pure mathematics, and the ſtudies dependent on that ſcience, there was hardly any part of human learning in which he had not acquired a competent ſkill, and in moſt of them a conſummate maſtery. To this account of his literary character we may add, that he had a fine taſte in painting, prints, gardening, and muſic; and was moreover a man of good-breeding, virtue, and humanity.

He died in 1771; and an edition of his poems, with memoirs of his life and writings, were publiſhed in 4to, in 1775, by Mr Maſon. This gentleman, however, inſtead of employing his own pen in drawing Mr Gray's character, has adopted one drawn by the Rev. Mr Temple, rector of Mamhead in Devonſhire, in a letter to Mr Boſwell; to whom the public are indebted for communicating it. "Perhaps (ſays Mr Temple) he was the moſt learned man in Europe. He was equally acquainted with the elegant and profound parts of ſcience, and that not ſuperficially but thoroughly. He knew every branch of hiſtory, both natural and civil; had read all the original hiſtorians of England, France, and Italy: and was a great antiquarian. Criticiſm, metaphyſics, morals, politics, made a principal part of his plan of ſtudy; voyages and travels of all ſorts were his favourite amuſement; and he had a fine taſte in painting, prints, architecture, and gardening. With ſuch a fund of knowledge, his converſation muſt have been equally inſtructing and entertaining; but he was alſo a good man, a well-bred man, a man of virtue and humanity. There is no character without ſome ſpeck, ſome imperfection; and I think the greateſt defect in his was an affectation in delicacy, or rather effeminacy, and a viſible faſtidiouſneſs, or contempt and diſdain of his inferiors in ſcience. He alſo had, in ſome degree, that weakneſs which diſguſted Voltaire ſo much in Congreve: though he ſeemed to value others chiefly according to the progreſs they had made in knowledge, yet he could not bear to be conſidered himſelf merely as a man of letters; and though without birth, or fortune, or ſtation, his deſire was to be looked upon as a private independent gentleman, who read for his amuſement. Perhaps, it may be ſaid, What ſignifies ſo much knowledge, when it produces ſo little? Is it worth taking ſo much pains to leave no memorial but a few poems? But let it be conſidered, that Mr Gray was, to others, at leaſt innocently employed: to himſelf, certainly beneficially. His time paſſed agreeably; he was every day making ſome new acquiſition in ſcience; his mind was enlarged, his heart ſoftened, and his virtue ſtrengthened; the world and mankind were ſhown to him without a maſk; and he was taught to conſider every thing as trifling, and unworthy the attention of a wiſe man, except the purſuit of knowledge, and the practice of virtue in that ſtate wherein God hath placed us."

GRAYLING, in ornithology, a ſpecies of SALMO.

In angling for this fiſh your hook muſt be armed upon the ſhanks with a very narrow plate of lead, which ſhould be ſlendereſt at the bent of the hook, that the bait (which is to be a large graſhopper, the uppermoſt wing of which muſt be pulled off) may come over to it the more eaſily. At the point let there be a cad-bait in a continual motion. The jag-tail, which is a worm of a pale fleſh-colour, with a yellow tag on its tail, is an excellent bait for the grayling in March and April.

GREASE, a ſwelling and gourdineſs of the legs of a horſe. See FARRIERY, § xxxvi.

GREAT, a term of compariſon, denoting a thing to have more extenſion than ſome other to which it is referred. Thus we ſay, a *great* ſpace, a *great* diſtance, a *great* figure, a *great* body, &c.

GREAT is likewiſe uſed figuratively in matters of morality, &c. to ſignify ample, noble, elevated, extraordinary, important, &c. Thus we ſay, Shakeſpeare was a *great* genius, Da Vinci a *great* painter, Galileo a *great* philoſopher, Boſſu a *great* critic, &c.

GREAT is alſo a title or quality appropriated to certain princes and other illuſtrious perſonages. Thus we ſay, the *great* Turk, the *great* Mogul, the *great* cham of Tartary, the *great* duke of Florence, &c.

GREAT is alſo a ſurname beſtowed on ſeveral kings and emperors. Thus we ſay, Alexander the *great*; Cyrus the *great*; Charles the *great*, or Charlemagne; Henry the *great* of France, &c.

GREAT is alſo applied to ſeveral officers who have pre-eminence over others. Thus we ſay, the lord *great* chamberlain; the *great* marſhal of Poland, &c.

GREATER TONE, in muſic. See TONE.

GREAVES (John), an eminent phyſician and antiquary, was the eldeſt ſon of John Greaves rector of Colemore, near Alresford in Hampſhire, and born in 1602. He was educated in Baliol College in Oxford, from which he removed to Merton. He was afterwards, on the foot of his great merit, choſen geometry profeſſor of Greſham College. His ardent thirſt of knowledge ſoon carried him into ſeveral parts of Europe, where he eagerly ſeized every opportunity of improving it. His next voyage was into the eaſtern countries; where nothing remarkable in the heavens, earth, or even ſubterraneous places, ſeems to have eſcaped his nice obſervation. He, with indefatigable induſtry, and even at the peril of his life, collected a conſiderable number of Arabic, Perſic, and Greek, manuſcripts, for archbiſhop Laud. Of theſe he well knew the value, as he was a maſter of the languages in which they were written. He alſo collected for that prelate many oriental gems and coins. He took a more accurate ſurvey of the pyramids than any traveller who went before him. On his return from the Eaſt, he viſited ſeveral parts of Italy a ſecond time. During his ſtay at Rome, he made a particular inquiry into the true ſtate of the ancient weights and meaſures. Soon after he had finiſhed his ſecond voyage, he was choſen Savilian profeſſor of aſtronomy at Oxford. He was eminently qualified for his profeſſorſhip, as the works of ancient and modern aſtronomers were familiar to him. His books relating to oriental learning, his *Pyramidographia*, or a deſcription of the pyramids in Egypt, his *Epocha Celebriores*, and other curious and uſeful pieces, of which Mr Ward has given us a catalogue, ſhow him to have been a great man. Thoſe which he intended to publiſh would have ſhown him to be a greater; but he was ſtopped in his great career by death in 1642.

GREBE, in ornithology. See COLYMBUS.

GREECE, the preſent Romelia, and in many reſpects one of the moſt deſervedly celebrated countries in the world, was anciently bounded on the north by Macedonia and the river Strymon; on the weſt by the Ionian ſea; on the ſouth by the Mediterranean; on the eaſt by the Egean ſea and Archipelago. It extended from the Strymon, by which it was parted from Thrace, to the promontory of Tenarus, the ſouthmoſt point of Peloponneſus, now the Morea, about 6° 20′ of latitude, or nearly 440 Engliſh miles, and in breath from eaſt to weſt about 359 miles.

The general names by which the inhabitants of this country were known to the ancients were thoſe of *Graioi*, or *Graicoi*, from whence the name of *Greece* is plainly derived. Theſe names are thought to come from Græcus, the father, or (according to ſome) the ſon, of Theſſalus, who gave name to Theſſaly; but ſome modern critics chooſe to derive it from *Ragau*, the ſame with *Reu*, the ſon of Peleg, by the tranſpoſition of a letter to ſoften the ſound.—Theſe names were afterwards changed for *Achæi* and *Hellenes*; the firſt, as is ſuppoſed, from *Achæus*, the ſon of Xuthus, the ſon of Hellen, and father of Ion; or, according to the fable, the ſon of Jupiter: the other from Hellen, abovementioned, the ſon of Deucalion, and father of Dorus, from whom came the *Dores*, afterwards a famous nation among the Greeks.—Another name by which the Greeks were known in ſome parts of the country, was that of *Pelaſgi*, which the Arcadians, the moſt ancient people in Greece, deduced from their pretended founder *Pelaſgus*; who is ſaid to have got ſuch footing in Peloponneſus, that the whole peninſula from him was called *Pelaſgia*. But the moſt ancient name of all is univerſally allowed to have been that of Iones, which the Greeks themſelves derived from Ion the ſon of Xuthus; or, as the fable hath it, of Apollo, by Creuſa the daughter of Erichtheus the grandſon of Deucalion. Joſephus, however, affirms, that their original is of much older date; and that Javan, the ſon of Japhet, and grandſon of Noah, was the firſt who peopled theſe countries; which Bochart hath alſo rendered very probable. It is true, indeed, that among the Greeks themſelves, only the Athenians, and ſuch colonies as ſprung from them, were called *Iones*; but it is alſo plain beyond exception, that other nations gave this name to all the inhabitants of Greece.

The inhabitants of Greece in the firſt ages, even by the confeſſion of their own hiſtorians, appear to have been ſavages ſcarce a degree removed from brutes. They lived indifferently on every fruit, herb, or root that came in their way; and lay either in the open fields, or at beſt ſheltered themſelves in dens, caves, and hollow trees; the country itſelf in the mean time remaining one continued uncultivated deſart.—The firſt improvement they made in their way of living, was the exchanging of their old food for the more wholeſome acorns, building huts for themſelves to ſleep in, and covering their bodies with the ſkins of beaſts. For all this it ſeems, they were beholden to Pelaſgius abovementioned (ſuppoſed by ſome to be Peleg ſpoken of in Scripture), and who was highly reverenced by them on that account.—This reformation in their way of life, however, it ſeems wrought none in their manners. On the contrary, they who had nothing to fight for but a hole to ſleep in, began now to envy and rob one another of theſe ſlender acquiſitions. This, in proceſs of time, put them under a neceſſity of joining themſelves into companies under ſome head, that they might either more ſafely plunder their neighbours, or preſerve what they had got. Laws they had none, except that of the ſword: ſo that thoſe only lived in ſafety who inhabited the moſt barren and craggy places; and hence Greece for a long time had no ſettled inhabitants, the weakeſt being always turned out by the ſtrongeſt. Their gigantic ſize and ſtrength, if we may believe Plutarch added ſo much to their inſolence and cruelty, that they ſeemed to glory in committing the greateſt acts of violence and barbarity on thoſe that unhappily fell into their hands.

The next advance towards civilization, was their forming themſelves into regular ſocieties, to cultivate the lands, and build themſelves towns and cities for their ſafety. Their original barbarity and mutual violences againſt each other naturally prevented them from uniting as one nation, or even into any conſiderable community: and hence the great number of ſtates into which Greece was originally divided. The moſt remarkable of theſe ſmall principalities mentioned in hiſtory are the following: In Peloponneſus were thoſe of Sicyon, Argos, and Meſſenia, Achaia Propria, Arcadia, and Laconia. In Grecia Propria (that part of Greece which lay without Peloponneſus), were thoſe of Attica, Megara, Bœotia, Locris, Epichnemidia, Doris, Phocis, Locris, Ozolæa, and Ætolia. In Epirus were the Moloſſi, Amphilochi, Caſſiopæi, Dræopes, Chaoces, Threſpotii, Almeni, and Acarnani. In Theſſaly were thoſe of Theſſaliotis, Eſtiotis, Pelaſgiotis, Magneſia, and Phthia.—All theſe have at one time or other been ſeverally governed by kings of their own, though we only find the names of many of them mentioned in the hiſtories of the more conſiderable kingdoms of Sparta, Attica, Thebes, &c. —The erection of theſe kingdoms, however, for ſome time, did not much alter the caſe; the inhabitants of the new kingdoms plundered and deſtroyed one another without mercy. Attica was the only place in any degree free from theſe incurſions, becauſe it was naturally deſtitute of every thing that could invite a plundering enemy; but thoſe cities fared much worſe which were ſituated on the ſea-coaſts; becauſe they were in continual danger of being plundered either by ſea or land: for pirates at that time did not leſs infeſt all thoſe ſeas than robbers did the land. And this was one main cauſe why moſt of the ancient cities of Greece were ſituated at ſome conſiderable diſtance from the ſhore; but even in theſe, as all their ſafety conſiſted in the reſiſtance they could make againſt an invader, their inhabitants were under a neceſſity of going conſtantly armed, and being ever on their guard.

Another miſchief ariſing from theſe continual piracies and robberies was, that they occaſioned the far greater part of the lands to lie uncultivated, ſo that the people only planted and ſowed as much as was barely neceſſary for their preſent ſupport; and where there was ſuch an univerſal neglect of agriculture, there could be as little room for any diſcoveries in other uſeful arts and trades. Hence, when other nations, as the Jews, Egyptians, Midianites, Phœnicians, &c. had improved themſelves to a very high degree, the Greeks ſeem to have been utter ſtrangers to every uſeful art.

During this period of ſavage barbarity, the moſt renouned Grecian heroes, as Hercules, Theſeus, &c. performed their exploits; which, however exaggerated by poetic fiction, no doubt had a foundation in truth. Some indeed are of opinion that the Grecian heroes are entirely fictitious, and their exploits derived from thoſe of the Hebrew worthies, ſuch as Samſon, Gideon, &c. Yet, conſidering the extreme degree of barbarity which at that time prevailed throughout Greece, it ſeems not at all improbable that ſome perſons of extraordinary ſtrength and courage might undertake the cauſe of the oppreſſed, and travel about like the more modern knights-errant in queſt of adventures.

The firſt expedition in which we find the Greeks united, was that againſt Troy, the particulars of which are recited under the article TROY. Their ſucceſs here (which happened about 1184 B. C.) coſt them very dear; vaſt numbers of their braveſt warriors being ſlain; great numbers of the ſurvivors being caſt away in their return; and many of thoſe who had the good luck to get back again, being ſoon after murdered, or driven out of their country. It is probable, however, that their having ſtaid for ſuch a long time in Aſia, might contribute to civilize the Greeks ſomewhat ſooner than what they otherwiſe would have been; and accordingly from this time, we find their hiſtory ſomewhat leſs obſcure, and as it were beginning to emerge out of darkneſs. The continual wars, indeed, in which they were engaged among themſelves, no doubt, for a long time, prevented them from making any conſiderable progreſs in thoſe arts in which they afterwards made ſo great progreſs. Theſe wars, which indeed never ceaſed as long as the Greeks preſerved their liberty, rendered them brave, and ſkilled in the military art, above all other nations; but at the ſame time they effectually prevented them from making permanent conqueſts, and confined them within the bounds of their own country; while the different ſtates were one way or other ſo equally balanced, that ſcarce one of them was able perfectly to ſubdue another. The Spartans, however, having, with great difficulty, reduced the kingdom of Meſſene, and added its territories to their own, became the leading people in Greece. Their ſuperiority was long diſputed by Athens; but the Peloponneſian war at laſt determined that point in favour of the Spartans, when the city of Athens was taken, and its walls demoliſhed by Lyſander the Spartan general. See Attica, nº 164.—By the battle of Leuctra, the Spartans loſt that ſuperiority which they had maintained for 500 years, and which now devolved on the Thebans. After the death of Epaminondas, the celebrated Theban general, however, as no perſon was found poſſeſſed of his abilities, the Thebans were again obliged to yield the ſuperiority to the Spartans. But by this time the Greeks had become acquainted with the luxuries and elegancies of life; and all the rigour of their original laws could not prevent them from valuing theſe as highly as other people. This did not indeed abate their valour, but heightened their mutual animoſities; at the ſame time that, for the ſake of a more eaſy and comfortable life, they became more diſpoſed to ſubmit to a maſter. The Perſians, whoſe power they had long dreaded, and who were unable to reſiſt them by force of arms, at laſt found out (by the advice of Alcibiades) the proper method of reducing the Grecian power; namely, by aſſiſting them by turns, and ſupplying one ſtate with money to fight againſt another, till they ſhould all be ſo much reduced, that they might become an eaſy prey. Thus the Greeks were weakened, though the Perſians did not reap any benefit from their weakneſs. Philip of Macedon entered into the ſame political views; and partly by intrigue, partly by force, got himſelf declared Generaliſſimo of Greece. His ſucceſſor Alexander the Great completed their ſubjection; and by deſtroying the city of Thebes, and exterminating its inhabitants, ſtruck ſuch terror throughout Greece, that he was as fully obeyed by all the ſtates as by any of the reſt of his ſubjects. During his abſence in Perſia, however, they attempted to ſhake off the Macedonian yoke, but were quelled by his general Antipater. The news of Alexander's death was to them a matter of the utmoſt joy; but their mutual animoſities prevented them from joining in any ſolid plan for the recovery of their liberties, and hence they continued to be oppreſſed by Alexander's ſucceſſors, or other tyrants, till Aratus, an Achæan, about 268. B. C. formed a deſign of ſetting his country free from theſe oppreſſors. He perſuaded a number of the ſmall republics to enter into a league for their own defence, which was called the *Achæan league*; and notwithſtanding that the republics, taken ſingly, had very little ſtrength, they not only maintained their independency, but ſoon became formidable when united. This aſſociation continued to become daily more and more powerful; but received a ſevere check from Cleomenes, king of Sparta, which obliged them to call in Antigonus to their aſſiſtance. This prince overcame Cleomenes at the battle of Sellaſia, and afterwards made himſelf maſter of Sparta. Thus he became a more formidable enemy than the one he had conquered, and the recovery of the Grecian liberties was incomplete.

Soon after this, the Greeks began to feel the weight of a power more formidable than any which they had yet experienced; namely, that of the Romans. That inſidious and haughty republic firſt intermeddled with the Grecian affairs, under pretence of ſetting them at liberty from the oppreſſion of Philip of Macedon. This, by a proper union among themſelves, they might have accompliſhed: but in this they acted as though they had been infatuated; receiving with the utmoſt joy the decree of the Roman conſul, who declared them free; without conſidering, that he who had thus given them liberty, might take it away at his pleaſure. This leſſon, however, they were ſoon taught, by the total reduction of their country to a Roman province; yet this can ſcarce be called a misfortune, when we look back to their hiſtory, and conſider their outrages upon one another: nor can we ſympathiſe with them for the loſs of that liberty which they only made uſe of to fill their country with ſlaughter and bloodſhed. After their conqueſt by the Romans, they made no united effort to recover their liberty. They continued in quiet ſubjection till the beginning of the 15th century. About that time, they began to ſuffer under the tyranny of the Turks, and their ſufferings were completed by the taking of Conſtantinople in 1453. Since that time, they have groaned under the yoke of a moſt deſpotic government; ſo that all traces of their former valour, ingenuity, and learning, are now in a manner totally extinct.

Modern Greece comprehends Macedonia; Albania, now called *Arnaut*; Epirus; Theſſaly, now *Jana*; Achaia, now *Livadia*; the Peloponneſus, now *Morea*; together with the iſlands on its coaſt, and in the Archipelago. The continent of Greece is ſeated betwixt the 36th and 43d degrees of north latitude; and between the 19th and 27th degrees of longitude, eaſt of London. To the north it is bounded, by Bulgaria and Servia, from which it is divided by a ridge of mountains; to the ſouth, by the Mediterranean ſea; to the eaſt, by Romania and the Archipelago; and to the weſt, by the Adriatic, or gulph of Venice. Its length is ſaid to be about 400 miles, and its utmoſt breadth about 350 miles. The air is extremely temperate and healthy: and the ſoil fruitful, though badly cultivated; yielding corn, wine, delicious fruits, and abounding with cattle, fowls, and veniſon. As to religion,

ligion, Chriſtianity was planted in Greece ſoon after the death of our Saviour, and flouriſhed there for many ages in great purity; but ſince the Greeks became ſubject to the Turkiſh yoke, they have ſunk into the moſt deplorable ignorance, in conſequence of the ſlavery and thraldom under which they groan, and their religion is now greatly corrupted. It is indeed little better than a heap of ridiculous ceremonies and abſurdities. The head of the Greek church is the patriarch of Conſtantinople; who is choſen by the neighbouring archbiſhops and Metropolitans, and confirmed by the emperor or grand viſir. He is a perſon of great dignity, being the head and director of the eaſtern church. The other patriarchs are thoſe of Jeruſalem, Antioch, and Alexandria. Mr Tournefort tells us, that the patriarchates are now generally ſet to ſale, and beſtowed upon thoſe who are the higheſt bidders. The patriarchs, metropolitans, archbiſhops, and biſhops, are always choſen from among the Caloyers or Greek monks. Before the patriarchs receive their patents and the caftan, which is a veſt of linſey-woolſey, or ſome other ſtuff, preſented by the grand ſignior to ambaſſadors and other perſons newly inveſted with ſome conſiderable dignity, they are obliged to make large preſents to the viſir, &c. The income of the patriarch of Conſtantinople is ſaid to amount to no leſs than one hundred and twenty thouſand guilders, of which he pays the one half by way of annual tribute to the Ottoman Porte, adding ſix thouſand guilders beſides as a preſent at the feaſt of Bairam. The next perſon to a biſhop among the clergy is an archimandrite; who is the director of one or more convents, which are called *mandren*; then come the abbot, the arch-prieſt, the prieſt, the deacon, the under-deacon, the chanter, and the lecturer. The ſecular clergy are ſubjected to no rules, and never riſe higher than high-prieſt. They are allowed to marry once; but it muſt be with a virgin, and before they are ordained. They have neither glebe nor tythes, but depend on the perquiſites that ariſe from their office; and they ſeldom preach but in Lent. The Greeks have few nunneries; but a great many convents of monks, who are all prieſts, and, ſtudents excepted, obliged to follow ſome handicraft employment, and lead a very auſtere life. The Greeks deny the ſupremacy of the pope, and abhor the worſhip of images; but have a multitude of pictures of ſaints in their churches, whom they pray to as mediators. Their faſts are very ſevere. They believe alſo in the doctrine of tranſubſtantiation, and that the Holy Ghoſt does not proceed from the Son. They admit not of purgatory, ſays Mr Thevenot: but yet they allow a third place, where they ſay the bleſſed remain, in expectation of the day of judgment. At maſs they conſecrate with leavened bread; and communicate under both kinds, as well laics as prieſts, and as well women and children as men. When they carry the ſacrament to the ſick, they do not proſtrate themſelves before it, nor expoſe it to be adored; neither do they carry it in proceſſion, or have any particular feaſt in honour of it. Baptiſm is performed among them by plunging the whole body of the child thrice into water. Immediately after baptiſm, they give it confirmation and the communion; and ſeven days after that, it undergoes the ceremony of ablution. When a prieſt is married, among other ceremonies, the bridegroom and bride drink each two glaſſes of wine; then the glaſs is given to the prieſt, who merrily drinks off the reſt of the wine, and breaking the glaſs, ſays, So may the bridegroom break the virginity of the bride. As to the character of the modern Greeks, they are ſaid to be very covetous, hypocritical, treacherous, great pederaſts, and at the ſame time revengeful to the higheſt degree; but very ſuperſtitious. They are ſo much deſpiſed by the Turks, that theſe do not value even a Greek who turns Mahometan. The Turks are remarkable for their taciturnity, they never uſe any unneceſſary words; but the Greeks, on the contrary, are very talkative and lively. The Turks generally practiſe what their religion enjoins, but the Greeks do not; and their miſery puts them upon a thouſand mean ſhifts and ſcandalous practices, authorized by bad example, and perpetuated from father to ſon. The Greek women have fine features and beautiful complexions: their countenances ſtill very much reſemble thoſe of the ancient Greek ſtatues.

GREEK, or **GRECIAN**, any thing belonging to ancient Greece.

The Greek language, as preſerved in the writings of the celebrated authors of antiquity, as Homer, Heſiod, Demoſthenes, Ariſtotle, Plato, Xenephon, &c. has a great variety of terms and expreſſions, ſuitable to the genius and occaſions of a polite and learned people, who had a taſte for arts and ſciences. In it, proper names are figurative; which is the reaſon that the modern languages borrow ſo many terms from it. When any new invention, inſtrument, machine, or the like, is diſcovered, recourſe is generally had to the Greek for a name to it; the facility wherewith words are there compounded, affording ſuch as will be expreſſive of its uſe: ſuch are, barometer, hygrometer, microſcope, teleſcope, thermometer, &c. But of all ſciences, medicine moſt abounds with ſuch terms; as diaphoretic, diagnoſis, diarrhœa, hæmorrhage, hydrophobia, phthiſis, atrophy, &c. Beſides the copiouſneſs and ſignificancy of the Greek, wherein it excels moſt, if not all, other languages, it has alſo three numbers, viz. a ſingular, dual, and plural: alſo abundance of tenſes in its verbs, which makes a variety in diſcourſe, prevents a certain dryneſs that always accompanies too great an uniformity, and renders that language peculiarly proper for all kinds of verſe. The uſe of the participles, of the aoriſt and preterite, together with the compound words already mentioned, give it a peculiar force and brevity without taking any thing from its perſpicuity.

It is no eaſy matter to aſſign the preciſe difference between the modern and ancient Greek; which conſiſts in the terminations of the nouns, pronouns, verbs, &c. not unlike what obtains between ſome of the dialects of the Italian or Spaniſh. There are alſo in the modern Greek many new words, not to be met with in the ancient. We may therefore diſtinguiſh three ages of the Greek tongue: the firſt of which ends at the time when Conſtantinople became the capital of the Roman empire; the ſecond laſted from that period to the taking of Conſtantinople by the Turks; and the third from that time to this.

Greek Bible. See Bible.

Greek Church, is that part of the Chriſtian church which is eſtabliſhed in Greece; extending likewiſe to ſome other parts of Turkey. See GREECE.—It is thus called in Europe, Aſia, and Africa, in contradiſtinction from the Latin or Romiſh church; as alſo the Eaſtern church, in diſtinction from the Weſtern.

The Romaniſts call the Greek church the *Greek ſchiſm*; becauſe the Greeks do not allow the authority of the pope, but depend wholly, as to matters of religion, on their own patriarchs. They have treated them as ſchiſmatics ever ſince the revolt, as they call it, of the patriarch Photius.

GREEK *Monks* and *Nuns*, of whatever order, conſider St Baſil as their founder and common father, and eſteem it the higheſt crime to deviate in the leaſt from his conſtitutions. There are ſeveral beautiful convents with churches, in which the monks perform divine ſervice day and night. Some of the monks are cænobites, or live together, wear the ſame habit, eat at the ſame table, and perform the ſame exerciſes and employments.

GREEK *Orders*, in architecture, are the Doric, Ionic and Corinthian; in contradiſtinction to the two Latin orders, the Tuſcan and Compoſite. See ORDER.

GREEN, one of the orignal priſmatic colours, exhibited by the refraction of the rays of light. See CHROMATICS and COLOUR.

GREEN, among painters and dyers. See *COLOUR-Making*, n° 27. and DYEING, n° 93—95.

GREEN-*Cloth*, a board or court of juſtice held in the compting-houſe, of the Britiſh king's houſehold, compoſed of the Lord Steward and officers under him, who ſit daily. To this court is committed the charge and overſight of the king's houſehold in matters of juſtice, and government, with a power to correct all offenders, and to maintain the peace of the verge, or juriſdiction of the court-royal; which is every way about 200 yards from the laſt gate of the palace where his majeſty reſides.

It takes its name, *board of green cloth*, from a green cloth ſpread over the board where they ſit.

Without a warrant firſt obtained from this court, none of the king's ſervants can be arreſted for debt.

Clerks of the GREEN-*Cloth* were two officers of the board of green cloth, who appointed the diet of the king and his houſehold; and kept all records, legers, and papers relating thereto; make up bills, parcels, and debentures for ſalaries, and proviſions and neceſſaries for the officers of the buttery, pantry, cellar, &c. They alſo waited upon foreign princes when entertained by his majeſty. But this has been lately aboliſhed.

GREEN *Finch*, in ornithology, the Engliſh name of the greeniſh fringilla, with the wings and tail variegated with yellow. See FRINGILLA.

GREEN-*Houſe*, or *Conſervatory*, a houſe in a Garden, contrived for ſheltering and preſerving the moſt curious and tender exotic plants, which in our climate will not bear to be expoſed to the open air, eſpecially during the winter ſeaſon. Theſe are generally large and beautiful ſtructures, equally ornamental and uſeful.

The length of greenhouſes muſt be proportioned to the number of plants intended to be preſerved in them, and cannot therefore be reduced to rule: but their depth ſhould never be greater than their height in the clear; which, in ſmall or middling houſes, may be 16 or 18 feet, but in large ones from 20 to 24 feet; and the length of the windows ſhould reach from about one foot and a half above the pavement, and within the ſame diſtance of the cieling, which will admit of a corniche round the building over the heads of the windows. Their breadth cannot be in proportion to their length; for if in the largeſt building they are more than ſeven or ſeven feet and a half broad, they will be extremely heavy and inconvenient. The piers between the windows muſt be as narrow as may be to ſupport the building; for which reaſon they ſhould either be of ſtone or hard burnt bricks. If the piers are made of ſtone, they ſhould be 30 inches wide in front, and ſloped off behind to about 18 inches, by which means there will be no corners to take off the rays of the ſun. If they are of brick, they will require to be at leaſt three feet in front, but they ſhould be in the ſame manner ſloped off behind. Over the greenhouſe may be rooms for drying and preſerving ſeeds, roots, &c. and behind it a place for tools and other purpoſes; and both theſe behind, and the rooms above, will be of great uſe in keeping off the froſts, ſo that the wall between theſe need not be of more than two bricks and a half in thickneſs.

The floor of the greenhouſe, which ſhould be laid either with Bremen ſquares, Purbeck ſtone, or flat tiles, muſt be raiſed two feet above the ſurface of the adjoining ground, or if the ſituation be damp, at leaſt, three feet; and if the whole is arched with low brick arches under the floor, they will be of great ſervice in preventing damps; and under the floor, about two feet from the front, it will be very adviſeable to make a flue of ten inches wide and two feet deep; this ſhould be carried the whole length of the houſe, and then returned back along the hinder part, and there be carried up into funnels adjoining to the tool-houſe, by which the ſmoke may be carried off. The fire-place may be contrived at one end of the houſe, and the door at which the fuel is put in, as alſo the aſh-gate, may be contrived to open into the tool-houſe, and the fuel being laid in the ſame place, the whole will be out of ſight. Bradley adviſes, that the front of greenhouſes, in the colder parts of England, be built in a ſweep or ſemicircle, ſo that one part or other of it may receive the ſun's rays all day. The uſe of fires muſt, however, be very ſparing in this place; and it is not one winter in three or four that will require them in any part, only when the weather is very ſevere, and the froſt cannot well be kept out any other way, this is an expedient that is good to have in readineſs, as it may ſave a whole houſe of plants. Withinſide of the windows, in front of the greenhouſe, there ſhould be good ſtrong ſhutters, made with hinges, to fold back cloſe to the piers, that they may not obſtruct the rays of the ſun. The back part of the houſe ſhould be either laid over with ſtucco or plaſtered with mortar, and whitewaſhed, in order to prevent the froſty air from penetrating through the walls. When the greenhouſe is wainſcotted, the walls ſhould be plaſtered with lime and hair behind the wainſcot, to keep out the cold; and the wainſcot, as well as the ceiling, and every part within the houſe, ſhould be painted white, for the reflection of the ſun's rays. There muſt be a number of treſſels with forms of wood upon them, to ſupport the pots of plants; the talleſt to be placed hindmoſt, the loweſt within four feet of the windows: and the rows of plants ſhould riſe gradually, ſo that the heads of the ſecond row ſhould be entirely above the firſt; and behind them there ſhould be a ſpace of at leaſt five feet, for the convenience of watering the plants, and for a free circulation of air. It has been obſerved, that the placing of the euphorbiums, cereuſes, and other ſucculent plants among orange-trees, and other common greenhouſe-plants, is always deſtructive of them, by making them receive an improper ſort of effluvia, which plants of that kind imbibe very freely. They ſhould therefore be placed in two wings built at each end of the greenhouſe; which, if well contrived, will be a great beauty as well as uſe to the building. Theſe wings may be made capable of a greater warmth alſo by more flues, and may be made to contain a hot-bed of tanners bark for the raiſing many of the tender plants, natives of warm climates.

Whilſt the front of the greenhouſe is exactly ſouth, one of the wings may be made to face the ſouth-eaſt and the other the ſouth-weſt. By this diſpoſition the heat of the ſun is reflected from one part of the building to the other all day, and the front of the main greenhouſe is guarded from the cold winds. Theſe two wings may be ſo contrived as to maintain plants of different degrees of hardineſs, which may be eaſily effected by the ſituation and extent of the fire-place, and the manner of conducting the flues: the wing facing the ſouth-eaſt is evidently the moſt proper for the warmeſt ſtove; this may be divided in the middle by a partition of glaſs, with glaſs-doors opening from one diviſion to the other. In each of theſe there ſhould be a fire-place, with flues carried up againſt the back-wall, through which the ſmoke ſhould be made to paſs as many times the length of the houſe as the height will admit of the number of flues; for the longer the ſmoke is in paſſing, the more heat will be given to the houſe with a leſs quantity of fuel. The other wing, facing the ſouth-weſt, ſhould be divided and furniſhed with flues in the ſame manner; and thus different degrees of heat may be obtained, according to the ſeaſons and the particular ſorts of plants that are to be preſerved. If there are no ſheds behind theſe wings, the walls ſhould not be leſs than three bricks thick; and the back part, having ſloping roofs, which are covered with tiles or ſlates, ſhould be lined with reeds, &c. under the covering. The ſloping glaſſes of theſe houſes ſhould be made to ſlide and take off, ſo that they may be drawn down more or leſs in warm weather to admit air to the plants; and the upright glaſſes in front may be ſo contrived as that every other may open as doors upon hinges, and the alternate glaſſes may be divided into two: the upper part of each ſhould be ſo contrived as to be drawn down like ſaſhes, ſo that either of them may be uſed to admit air in a greater or leſs quantity as there may be occaſion.

As to the management of the plants herein, Mortimer recommends the opening of the mould about them from time to time, and ſprinkling a little freſh mould in them, and a little warm dung on that; as alſo to water them when the leaves begin to wither and curl, and not oftener, which would make them fade and be ſickly; and to take off ſuch leaves as wither and grow dry.

Green Sickneſs (Chloroſis). See Index ſubjoined to Medicine.

Green-Silver, the name of an ancient cuſtom within the manor of Writtel in the county of Eſſex in England; which is, that every tenant whoſe fore-door opens to Greenbury ſhall pay an half-penny yearly to the lord, by the name of *green-ſilver*.

Green-Wax, is uſed where eſtates are delivered to the ſheriffs out of the exchequer, under the ſeal of that court, made in green wax, to be levied in the ſeveral counties. This word is mentioned the 43d ſtat. Ed. III. c. 9. and 7 Hen. IV. c. 4.

GREENLAND, a general name by which are denoted the moſt eaſterly parts of America, ſtretching towards the north pole, and likewiſe ſome iſlands to the northward of the continent of Europe, lying in very high latitudes.

1 West Greenland deſcribed.

This country is divided into Weſt and Eaſt Greenland.—Weſt Greenland is now determined by the lateſt maps to be a part of the continent of America, though upon what authority is not very clear. That part of it which the Europeans have any knowledge of is bounded on the weſt by Baffin's Bay, on the ſouth by Davis's Straits, and on the eaſt by the northern part of the Atlantic Ocean. It is a very mountainous country, and ſome parts of it ſo high that they may be diſcerned 30 leagues off at ſea. The inland mountains, hills, and rocks, are covered with perpetual ſnow; but the low lands on the ſea-ſide are clothed with verdure in the ſummer ſeaſon. The coaſt abounds with inlets, bays, and large rivers; and is ſurrounded with a vaſt number of iſlands of different dimenſions. In a great many places, however, on the eaſtern coaſt eſpecially, the ſhore is inacceſſible by reaſon of the floating mountains of ice. The principal river, called *Baal*, falls into the ſea in the 64th degree of latitude, where the firſt Daniſh lodge was built 1721; and has been navigated above 40 miles up the country.

2 Peopled by a colony from Iceland.

Weſt Greenland was firſt peopled by Europeans in the eighth century. At that time a company of Icelanders, headed by one Ericke Rande, were by accident driven on the coaſt. On his return he repreſented the country in ſuch a favourable light, that ſome families again followed him thither, where they ſoon became a thriving colony, and beſtowed on their new habitation the name of *Groenland*, or *Greenland*, on account of its verdant appearance. This colony was converted to Chriſtianity by a miſſionary from Norway, ſent thither by the celebrated Olaf, the firſt Norwegian monarch who embraced the true religion. The Greenland ſettlement continued to increaſe and thrive under his protection; and in a little time the country was provided with many towns, churches, convents, biſhops, &c. under the juriſdiction of the archbiſhop of Drontheim. A conſiderable commerce was carried on between Greenland and Norway; and a regular intercourſe maintained between the two countries till the year 1406, when the laſt biſhop was ſent over. From that time all correſpondence was cut off, and all knowledge of Greenland has been buried in oblivion.

3 All correſpondence with it ſuddenly cut off.

This ſtrange and abrupt ceſſation of all trade and intercourſe has been attributed to various cauſes; but the moſt probable is the following. The colony, from its firſt ſettlement, had been haraſſed by the natives; a barbarous and ſavage people; agreeing in cuſtoms, garb, and appearance, with the Eſquimaux found about Hudſon's Bay. This nation, called *Schrellings*,

4
Colony ſuppoſed to be exterminated.

at length prevailed againſt the Iceland ſettlers who inhabited the weſtern diſtrict, and exterminated them in the 14th century: inſomuch, that when their brethren of the eaſtern diſtrict came to their aſſiſtance, they found nothing alive but ſome cattle and flocks of ſheep running wild about the country. Perhaps they themſelves afterwards experienced the ſame fate, and were totally deſtroyed by theſe Schrellings, whoſe deſcendants ſtill inhabit the weſtern parts of Greenland, and from tradition confirm this conjecture. They affirm that the houſes and villages, whoſe ruins ſtill appear, were inhabited by a nation of ſtrangers, whom their anceſtors deſtroyed. There are reaſons, however, for believing that there may be ſtill ſome deſcendants of the ancient Iceland colony remaining in the eaſtern diſtrict, though they cannot be viſited by land, on account of the ſtupendous mountains, perpetually covered with ſnow, which divide the two parts of Greenland; while they have been rendered inacceſſible by ſea, by the vaſt quantity of ice driven from Spitzbergen, or Eaſt Greenland. One would imagine that there muſt have been ſome conſiderable alteration in the northern parts of the world ſince the 15th century, ſo that the coaſt of Greenland is now become almoſt totally inacceſſible, though formerly viſited with very little difficulty. It is alſo natural to aſk, By what means the people of the eaſtern colony ſurmounted the abovementioned obſtacles when they went to the aſſiſtance of their weſtern friends; how they returned to their own country; and in what manner hiſtorians learned the ſucceſs or their expedition? Concerning all this we have very little ſatisfactory information.

5
Account of the colony.

All that can be learned from the moſt authentic records is, that Greenland was divided into two diſtricts, called *Weſt Bygd* and *Eaſt Bygd:* that the weſtern diviſion contained four pariſhes and 100 villages: that the eaſtern diſtrict was ſtill more flouriſhing, as being nearer to Iceland, ſooner ſettled, and more frequented by ſhipping from Norway. There are alſo many accounts, though moſt of them romantic and ſlightly atteſted, which render it probable that part of the eaſtern colony ſtill ſubſiſts, who, at ſome time or other, may have given the imperfect relation abovementioned. This colony, in ancient times, certainly comprehended twelve extenſive pariſhes, one hundred and ninety villages; a biſhop's ſee, and two monaſteries. The preſent inhabitants of the weſtern diſtrict are entirely ignorant of this part, from which they are divided by rocks, mountains, and deſerts, and ſtill more effectually by their apprehenſion: for they believe the eaſtern Greenlanders to be a cruel, barbarous nation, that deſtroy and eat all ſtrangers who fall into their hands. About a century after all intercourſe between Norway and Greenland had ceaſed, ſeveral ſhips were ſent ſucceſſively by the kings of Denmark in order to diſcover the eaſtern diſtrict; but all of them miſcarried.

6
Attempts to rediſcover the country.

Among theſe adventurers, Mogens Heinſon, after having ſurmounted many difficulties and dangers, got ſight of the land; which, however, he could not approach. At his return, he pretended that the ſhip was arreſted in the middle of her courſe by certain rocks of loadſtone at the bottom of the ſea. The ſame year, 1576, in which this attempt was made, has been rendered remarkable by the voyage of Captain Martin Frobiſher, ſent upon the ſame errand by Queen Elizabeth. He likewiſe deſcribed the land; but could not reach it, and therefore returned to England; yet not before he had ſailed ſixty leagues in the ſtrait which ſtill retains his name, and landed on ſeveral iſlands, where he had ſome communication with the natives. He had likewiſe taken poſſeſſion of the country in the name of Queen Elizabeth; and brought away ſome pieces of heavy black ſtone, from which the refiners of London extracted a certain proportion of gold. In the enſuing ſpring he undertook a ſecond voyage, at the head of a ſmall ſquadron, equipped at the expence of the public; entered the ſtraits a ſecond time; diſcovered upon an iſland a gold and ſilver mine; beſtowed names upon different bays, iſlands, and headlands; and brought away a lading of ore, together with two natives, a male and a female, whom the Engliſh kidnapped.

Such was the ſucceſs of this voyage, that another armament was fitted out under the auſpices of Admiral Frobiſher, conſiſting of 15 ſail, including a conſiderable number of ſoldiers, miners, ſmelters, carpenters, and bakers, to remain all the winter near the mines in a wooden fort, the different pieces of which they carried out in the tranſports. They met with boiſterous weather, impenetrable fogs, and violent currents upon the coaſt of Greenland, which retarded their operations until the ſeaſon was far advanced. Part of their wooden fort was loſt at ſea; and they had neither proviſion nor fuel ſufficient for the winter. The admiral therefore determined to return with as much ore as he could procure: of this they obtained large quantities out of a new mine, to which they gave the name of the Counteſs of Suſſex. They likewiſe built an houſe of ſtone and lime, provided with ovens; and here, with a view to conciliate the affection of the natives, they left a quantity of ſmall morrice-bells, knives, beads, looking-glaſſes, leaden pictures, and other toys, together with ſeveral loaves of bread. They buried the timber of the fort where it could be eaſily found next year; and ſowed corn, peaſe, and other grain, by way of experiment, to know what the country would produce. Having taken theſe precautions, they ſailed from thence in the beginning of September; and after a month's ſtormy paſſage, arrived in England: but this noble deſign was never proſecuted.

Chriſtian IV. king of Denmark, being deſirous of diſcovering the old Greenland ſettlement, ſent three ſhips thither, under the command of Captain Godſke Lindenow; who is ſaid to have reached the eaſt coaſt of Greenland, where he traded with the ſavage inhabitants, ſuch as they are ſtill found in the weſtern diſtrict, but ſaw no ſigns of a civilized people. Had he actually landed in the eaſtern diviſion, he muſt have perceived ſome remains of the ancient colony, even in the ruins of their convents and villages. Lindenow kidnapped two of the natives, who were conveyed to Copenhagen; and the ſame cruel fraud (A) was practiſed

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(A) Nothing can be more inhuman and repugnant to the dictates of common juſtice than this practice of tearing away poor creatures from their country, their families, and connections: unleſs we ſuppoſe them altogether tiſed by other two ſhips which ſailed into Davis's Straights, where they diſcovered divers fine harbours, and delightful meadows covered with verdure. In ſome places they are ſaid to have found a conſiderable quantity of ore, every hundred pounds of which yielded twenty-ſix ounces of ſilver. The ſame Admiral Lindenow made another voyage to the coaſt of Greenland in the year 1606, directing his courſe to the weſtward of Cape-Farewell. He coaſted along the ſtraits of Davis; and having made ſome obſervations on the face of the country, the harbours and iſlands, returned to Denmark. Carſten Richards, being detached with two ſhips on the ſame diſcovery, deſcried the high land on the eaſtern ſide of Greenland; but was hindered by the ice from approaching the ſhore.

Other expeditions of the ſame nature have been planned and executed with the ſame bad ſucceſs, under the auſpices of a Daniſh company of merchants. Two ſhips returned from the weſtern part of Greenland loaded with a kind of yellow ſand, ſuppoſed to contain a large proportion of gold. This being aſſayed by the goldſmiths of Copenhagen, was condemned as uſeleſs, and thrown overboard; but from a ſmall quantity of this ſand, which was reſerved as a curioſity, an expert chemiſt afterwards extracted a quantity of pure gold. The captain, who brought home this adventure, was ſo chagrined at his diſappointment, that he died of grief, without having left any directions concerning the place where the ſand had been diſcovered. In the year 1654, Henry Moller, a rich Dane, equipped a veſſel under the command of David de Nelles, who ſailed to the weſt coaſt of Greenland, from which he carried off three women of the country. Other efforts have been made, under the encouragement of the Daniſh king, for the diſcovery and recovery of the old Iceland colony in Greenland; but all of them miſcarried, and people began to look upon ſuch expeditions as wild and chimerical. At length the Greenland company at Bergen in Norway, tranſported a colony to the weſtern coaſt, about the 64th degree of latitude; and theſe Norwegians ſailed in the year 1712, accompanied by the Reverend Hans Egede, to whoſe care, ability, and preciſion, we owe the beſt and moſt authentic account of modern Greenland. This gentleman endeavoured to reach the eaſtern diſtrict: by coaſting ſouthwards, and advanced as far as the States Promontory; but the ſeaſon of the year, and continual ſtorms, obliged him to return; and as he could not even find the Strait of Forbiſher, he concluded that no ſuch place ever exiſted. In the year 1724, a ſhip being equipped by the company, ſailed on this diſcovery, with a view to land on eaſt ſide oppoſite to Iceland; but the vaſt ſhoals of ice, which barricadoed that part of the coaſt, rendered this ſcheme impracticable. His Daniſh majeſty, in the year 1728, cauſed horſes to be tranſported to Greenland, in hope that the ſettlers might by their means travel over land to the eaſtern diſtrict; but the icy mountains were found impaſſable. Finally, lieutenant Richards, in a ſhip which had wintered near the new Daniſh colony, attempted, in his return to Denmark, to land on the eaſtern ſhore; but all his endeavours proved abortive.

Mr Egede is of opinion, that the only practicable method of reaching that part of the country, will be to coaſt north-about in ſmall veſſels, between the great flakes of ice and the ſhore; as the Greenlanders have declared, that the currents continually ruſhing from the bays and inlets, and running ſouth-weſtwards along the ſhore, hinder the ice from adhering to the land; ſo that there is always a channel open, through which veſſels of ſmall burden might paſs, eſpecially if lodges were built at convenient diſtances on the ſhore, for the convenience and direction of the adventurers.

7
Mr Egede's account of the country.

That part of the country which is now viſited and ſettled by the Danes and Norwegians, lies between the 64th and 68th degrees of north latitude; and thus far it is ſaid the climate is temperate. In the ſummer, which continues from the end of May to the middle of September, the weather is warm and comfortable, while the wind blows eaſterly; though even at this time ſtorms frequently happen, which rage with incredible violence; and the ſea coaſts are infeſted with fogs that are equally diſagreeable and unhealthy. Near the ſhore, and in the bays and inlets, the low land is clothed with the moſt charming verdure: but the inland mountains are perpetually covered with ice and ſnow. To the northward of the 68th degree of latitude the cold is prodigiouſly intenſe; and towards the end of Auguſt all the coaſt is covered with ice, which never thaws till April or May, and ſometimes not till the latter end of June. Nothing can exhibit a more dreadful, and at the ſame time a more dazzling appearance, than thoſe prodigious maſſes of ice that ſurround the whole coaſt in various forms, reflecting a multitude of colours from the ſun-beams, and calling to mind the enchanted ſcenes of romance. Such proſpects they yield in calm weather; but when the wind

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gether deſtitute of natural affection; and that this was not the caſe with thoſe poor Greenlanders, ſome of whom were brought alive to Copenhagen, appears from the whole tenor of their conduct, upon their firſt capture, and during their confinement in Denmark. When firſt captivated, they rent the air with their cries and lamentations: they even leaped into the ſea; and, when taken on board, for ſome time refuſed all ſuſtenance. Their eyes were continually turned towards their dear country, and their faces always bathed in tears. Even the countenance of his Daniſh majeſty, and the careſſes of the court and people, could not alleviate their grief. One of them was perceived to ſhed tears always when he ſaw an infant in the mother's arms; a circumſtance from whence it was naturally concluded, that he had left his wife with a young child in Greenland. Two of them went to ſea in their little canoes in hope of reaching Greenland; but one of them was retaken. Other two made the ſame attempt; but were driven by a ſtorm on the coaſt of Schonen, where they were apprehended by the peaſants, and reconveyed to Copenhagen. One of them afterwards died of a fever, caught in fiſhing pearl, during the winter, for the governor of Kolding. The reſt lived ſome years in Denmark; but at length ſeeing no proſpect of being able to reviſit their native country, they ſunk into a kind of melancholy diſorder, and expired.

begins to blow, and the waves to riſe in vaſt billows, the violent ſhocks of thoſe pieces of ice daſhing againſt one another fill the mind with horror.—Greenland is ſeldom viſited with thunder and lightning, but the *Aurora Borealis* is very frequent and bright. At the time of new and full moon, the tide riſes and falls upon this coaſt about three fathoms; and it is remarkable, that the ſprings and fountains on ſhore riſe and fall with the flux and reflux of the ocean.

The ſoil of Greenland varies like that of all other mountainous countries. The hills are very barren, being indeed frozen throughout the whole year; but the valleys and low grounds, eſpecially near the ſea, are rich and fruitful. The ancient Norwegian chronicles inform us, that Greenland formerly produced a great number of cattle; and that conſiderable quantities of butter and cheeſe were exported to Norway; and, on account of their peculiar excellency, ſet apart for the king's uſe. The ſame hiſtories inform us, that ſome parts of the country yielded excellent wheat; and that large oaks were found here, which carried acorns as big as apples. Some of theſe oaks ſtill remain in the ſouthern parts, and in many places the marks of ploughed land are eaſily perceived. At preſent, however, the country is deſtitute of corn and cattle, though in many places it produces excellent paſture; and if properly cultivated, would probably yield grain alſo. Mr Egede ſowed ſome barley in a bay adjoining to the Daniſh colony. It ſprang up ſo faſt, that by the latter end of July it was in the full ear; but being nipped by a night-froſt, it never arrived at maturity. This ſeed was brought from Bergen; where the ſummer is of greater heat and duration than in Greenland; but in all probability the corn which grows in the northern parts of Norway would alſo thrive here. Turnips and coleworts of an excellent taſte and flavour are alſo produced here. The ſides of the mountains near the bays are clothed with wild thyme, which diffuſes its fragrance to a great diſtance. The herb tormentil is very common in this country, and likewiſe many others not deſcribed by the botaniſts. Among the fruits of Greenland we number juniper-berries, blue-berries, bil-berries, and bramble-berries.

Greenland is thought to contain many mines of metal though none of them are wrought. To the ſouthward of the Daniſh colony are ſome appearances of a mine of copper. Mr Egede once received a lump of ore from one of the natives; and here he found calamine of a yellow colour. He once ſent a conſiderable quantity of ſand of a yellow colour, intermixed with ſtreaks of vermilion, to the Bergen company. They probably found their account in this preſent; for they deſired him by a letter to procure as much of that ſand as poſſible: but he was never able to find the place where he ſaw the firſt ſpecimen. It was one of the ſmalleſt among a great number of iſlands; and the mark he had ſet up was blown down by a violent ſtorm. Poſſibly this might be the ſame mineral of which Captain Frobiſher brought ſo much to England. This country produces rock-cryſtals both red and white, and whole mountains of the aſbeſtos or incombuſtible flax. Around the colony, which is known by the name of *Good Hope*, they find a kind of baſtard marble of various colours, which the natives form into bowls, lamps, pots, &c. All that has been ſaid of the fertility of Greenland, however, muſt be underſtood only of that part which lies between the 60th and 65th degrees of latitude. The moſt northern parts are totally deſtitute of herbs and plants. The wretched inhabitants, cannot find graſs in ſufficient qualities to ſtuff into their ſhoes to keep their feet warm, but are obliged to buy it from thoſe who inhabit the more ſouthern parts.

The animals which abound moſt in Greenland are, rein-deer, foxes, hares, dogs and white bears. The hares are of a white colour, and very fat; the foxes are of different colours, white, greyiſh, and bluiſh; and ſmaller than thoſe of Denmark and Norway. The natives keep a great number of dogs, which are large, white, or ſpeckled, and rough, with ears ſtanding upright, as is the caſe with all the dogs peculiar to cold climates. They are timorous and ſtupid; and neither bay nor bark, but ſometimes howl diſmally. In the northern parts the natives yoke them in ſledges; which, though heaven laden, they will draw on the ice at the rate of 70 miles in a ſhort winter's day. Theſe poor animals are very ill rewarded for their ſervice; being left to provide for themſelves, except when their maſters happpen to catch a great number of ſeals. On theſe occaſions the dogs are regaled with the blood and entrails; at other times they ſubſiſt, like wild beaſts, upon muſcles and berries. Here alſo are found great numbers of ravens, eagles of a prodigious ſize, falcons, and other birds of prey; and likewiſe a kind of linnet, which warbles very melodiouſly. Whales, ſword-fiſh, porpoiſes, &c. abound on the coaſts; alſo holybut, turbot, cod, haddock, &c. The more dubious animals alſo, called *mermaids*, *ſea-ſerpents*, and *krakens*, ſaid to be found on the coaſt of Norway, are ſaid likewiſe to dwell in theſe ſeas. Mr Egede aſſures us, that in the year 1734, the ſea-ſerpent was ſeen off the new Daniſh colony, and raiſed its head maſt high above the ſurface of the water. See KRAKEN, MERMAID, and *Sea-SERPENTS*.

8
Account of the inhabitants.

The people who now inhabit the weſtern coaſt of Greenland, and who, without doubt, are the deſcendants of the ancient *Schrellings*, who exterminated the firſt Iceland colony, bear a near reſemblance to the Samoiedes and Laplanders in their perſons, complexions, and way of life. They are ſhort, brawny, and inclined to corpulency; with broad faces, flat noſes, thick lips, black hair and eyes, and a yellowiſh tawney complexion. They are for the moſt part vigorous and healthy, but remarkably ſhort-lived; few of them reaching the grand climacteric; and many dying in their infancy, and in the prime of youth. They are ſubject to a weakneſs in the eyes, occaſioned by the piercing winds and the glare of the ſnow in the winter-time. The leproſy is known among them, but is not contagious. Thoſe that dwell in the northern parts are miſerably tormented with dyſenteries, rheums, and pulmonary diſorders, boils, and epilepſy. The ſmall-pox being imported among them from Copenhagen in the year 1734, made terrible havoc among theſe poor people, who are utterly deſtitute of any knowledge of the medicinal art, and depend entirely for aſſiſtance upon the *angekuts* or conjurers. In their diſpoſitions the Greenlanders are cold, phlegmatic, indolent, and ſlow of apprehenſion; but very quiet, orderly, and good-natured. They live peaceably together; and have every thing in common, without ſtrife, envying, or animoſity. They are civil and hoſpitable, but ſlovenly to a degree almoſt beyond the Hottentots themſelves. They never waſh themſelves with water; but lick their paws like the cat, and then rub their faces with them. They eat after their dogs without waſhing their diſhes; devour the lice which devour them; and even lick the ſweat, which they ſcrape off from their faces with their knives. The women waſh themſelves with their own urine, which they imagine makes their hair grow; and in the winter-time go out immediately after, to let the liquor freeze upon their ſkin. They will often eat their victuals off the dirty ground, without any veſſel to hold them in; and devour rotten fleſh with the greateſt avidity. In times of ſcarcity they will ſubſiſt on pieces of old ſkin, reeds, ſea-weed, and a root called *tuglornet*, dreſſed with trail-oil and fat. The dung of rein-deer taken from the inteſtines, the entrails of partridges, and all ſorts of offals, are counted dainties among theſe ſavages; and of the ſcrapings of ſeals ſkins they make delicate pan-cakes. At firſt they could not taſte the Daniſh proviſions without abhorrence; but now they are become extremely fond of bread and butter, though they ſtill retain an averſion to tobacco and ſpirituous liquors; in which particular they differ from almoſt all ſavages on the face of the earth.

The Greeenlanders commonly content themſelves with one wife; who is condemned, as among other ſavage nations, to do all the drudgery, and may be corrected, or even divorced, by the huſband at pleaſure. Heroes, however, and extraordinary perſonages, are indulged with a plurality of wives. Their young women are generally chaſte and baſhful; but at ſome of their feaſts, in the midſt of their jollity, a man retires with his neighbour's wife behind a curtain made of ſkins; and all the gueſts, thus coupled, retire in their turns. The women think themſelves happy if an angekut or prophet will thus honour them with his careſſes. Theſe people never marry within the prohibited degrees of conſanguinity, nor is it counted decent in a couple to marry who have been educated in the ſame family.—They have a number of ridiculous and ſuperſtitious cuſtoms; among which the two following are the moſt remarkable. While a woman is in labour, the goſſips hold a chamber-pot over her head, as a charm to haſten the delivery. When the child is a year old, the mother licks and ſlabbers it all over, to render it, as ſhe imagines, more ſtrong and hardy.

9 Language, religion, &c. All the Greenlanders hitherto known ſpeak the ſame language, though different dialects prevail in different parts of the country. It abounds with double conſonants; and is ſo guttural, that the pronunciation of many words is not to be learned except by thoſe who have been accuſtomed to it from their infancy. The letters C, D, F, Q, and X, are not known in their alphabet. Like the North Americans, and inhabitants of Kamſchatka, they have a great number of long polyſyllables. Their words, nouns as well as verbs, are inflected at the end by varying the terminations without the help of articles; but their language being found defective, they have adopted a good many words from the Norwegian dialect. Notwithſtanding the endeavours of the Daniſh miſſionaries, they have no great reaſon to boaſt of the proſelytes they have made of the natives of Greenland. Theſe ſavages pay great deference and reſpect to the Danes, whom indeed they obey as their maſters, and hear the truths of the Chriſtian religion expounded without doubting the veracity of their teachers; but at the ſame time they liſten with the moſt mortifying indifference, without being in the leaſt influenced by what they have heard. They believe in the immortality of the ſoul, and the exiſtence of a ſpirit whom they call *Torngarſuk*; but of whom they have formed the moſt ridiculous notions. The Angekuts, who are ſuppoſed to be his immediate miniſters, differ concerning the principles of his exiſtence; ſome affirming that he is without form or ſhape; others, that he has the ſhape of a bear; others, that he has a large human body with only one arm; while others affirm that he is no larger than a man's finger, with many other abſurdities of a ſimilar kind. They have alſo a peculiar kind of mythology, by which they believe all the elements to be full of ſpirits, from among which every one of their prophets is ſupplied with a familiar which they name *Torngack*, and who is always ready when ſummoned to his aſſiſtance.

The Greenlanders are employed all the year round either in fiſhing or hunting. At ſea they purſue the whales, morſes, ſeals, fiſh for eating, and ſea-fowl. On ſhore they hunt the rein-deer in different parts of the country. They drive theſe animals, which feed in large herds, into a narrow circle or defile, where they are eaſily ſlain with arrows. Their bow is made of fir-tree, wound about with the twiſted ſinews of animals: the ſtring is compoſed of the ſame ſtuff, or of ſeal ſkin: the arrow is a good fathom in length, pointed with a bearded iron, or a ſharp bone; but thoſe with which they kill birds are blunt, that they may not tear the fleſh. Sea-fowls they kill with lances, which they throw to a great diſtance with ſurpriſing dexterity. Their manner of catching whales is quite different from that practiſed by the Europeans. About 50 perſons, men and women, ſet out in one long boat, which is called a *kone-boat*, frome *kone* a 'woman,' becauſe it is rowed by females only. When they find a whale, they ſtrike him with harpoons, to which are faſtened with long lines ſome ſeals ſkins blown up like bladders. Theſe, by floating on the ſurface, not only diſcover the back of the whale, but hinder him from diving under water for any length of time. They continue to purſue him until he loſes ſtrength, when they pierce him with ſpears and lances till he expires. On this occaſion they are clad in their ſpring coats conſiſting of one piece, with gloves, boots, caps made of ſeal ſkin ſo cloſely laced and ſewed that they keep out water. Thus accoutred, they leap into the ſea; and begin to ſlice off the fat, even under water, before the whale is dead.—They have many different ways of killing ſeals; namely, by ſticking them with a ſmall harpoon equipped alſo with an air-bag; by watching them when they come to breathe at the air-holes in the ice, and ſtriking them with ſpears; by approaching them in the diſguiſe of their own ſpecies, that is, covered with a ſeal-ſkin, creeping upon the ice, and moving the head from ſide to ſide as the ſeals are accuſtomed to do. By this ſtratagem the Greenlander moves towards the unſuſpecting ſeal, and kills him with a ſpear. The Greenlanders angle with lines made of whale-bone cut very ſmall, by means of which they ſucceed wonderfully. The Greenland canoe, like that uſed in Nova Zembla and Hudſon's bay, is about three fathoms in length, pointed at both ends, and three quarters of a yard in breadth. It is compoſed of thin rafts faſtened together with the ſinews of animals. It is covered with dreſſed ſeal-ſkins both below and above, in ſuch a manner that only a circular hole is left in the middle, large enough to admit the body of one man. Into this the Greenlander thruſts himſelf up to the waiſt, and faſtens the ſkin ſo tight about him that no water can enter. Thus ſecured, and armed with a paddle broad at both ends, he will venture out to ſea in the moſt ſtormy weather to catch ſeals and ſea-fowl; and if he is overſet, he can eaſily raiſe himſelf by means of his paddle. A Greenlander in one of theſe canoes, which was brought with him to Copenhagen, outſtripped a pinnace of 16 oars, manned with choice mariners.—The kone-boat is made of the ſame materials, but more durable; and ſo large, that it will contain 50 perſons with all their tackle, baggage, and proviſions. She is fitted with a maſt, which carries a triangular ſail made of the membranes and entrails of ſeals, and is managed without the help of braces and bowlings. Theſe kones are flat bottomed, and ſometimes 60 feet in length. The men think it beneath them to take charge of them; and therefore they are left to the conduct of the women, who indeed are obliged to do all the drudgery, including even the building and repairing their houſes, while the men employ themſelves wholly in preparing their hunting implements and fiſhing tackle.

This country is but thinly inhabited. In the winter time the people dwell in huts built of ſtone or turf: on the one ſide are the windows, covered with the ſkins of ſeals or rein-deer. Several families live in one of theſe houſes, poſſeſſing each a ſeparate apartment, before which is a hearth with a great lamp placed on a trevit, over which hangs their kettle: above is a rack or ſhelf on which their wet clothes are dried. They burn train-oil in their lamps; and inſtead of wick, they uſe a kind of moſs, which fully anſwers the purpoſe. Theſe fires are not only ſufficient to boil their victuals; but likewiſe produce ſuch a heat, that the whole houſe is like a bagnio. The door is very low, that as little cold air as poſſible may be admitted. The houſe within is lined with old ſkins, and ſurrounded with benches for the conveniency of ſtrangers. In the ſummer-time they dwell in tents made of long poles fixed in a conical form, covered in the inſide with deer-ſkins, and on the outſide with ſeals ſkins, dreſſed ſo that the rain cannot pierce them.

10 East Greenland.

Eaſt Greenland was for a long time conſidered as a part of the continent of Weſt Greenland, but is now diſcovered to be an aſſemblage of iſlands lying between 76° 46′ and 80° 30′ of north latitude, and between 9° and 20° of eaſt longitude. It was diſcovered by Sir Hugh Willoughby in the 1553, who called it *Groenland*; ſuppoſing it to be a part of the weſtern continent. In 1595, it was again viſited by William Barentz and John Cornelius, two Dutchmen, who pretended to be the original diſcoverers, and called the country *Spitzbergen*, or Sharp Mountains, from the many ſharp-pointed and rocky mountains with which it abounds. They alleged that the coaſt diſcovered by Sir Hugh Willoughby was ſome other country; which accordingly the Hollanders delineated on their maps and charts by the name of *Willoughby Land*; whereas in fact no ſuch land ever exiſted; and long before the voyage of theſe Dutchmen, Stephen Barrows, an Engliſh ſhipmaſter, had coaſted along a deſolate country from N. Lat 78° to 80° 11′, which was undoubtedly Spitzbergen. The ſea in the neighbourhood of the iſlands of Spitzbergen abounds very much with whales, and is the common reſort of the whale-fiſhing ſhips from different countries, and the country itſelf is frequently viſited by theſe ſhips; but till the late voyage of the Hon. Capt. Phipps, by order of his Britannic majeſty, the ſituation of it was erroneouſly laid down. It was imagined that the land ſtretched to the northward as far as 82° of north latitude; but Capt. Phipps found the moſt northerly point of land, called *Seven Iſlands*, not to exceed 80° 30′ of latitude. Towards the eaſt he ſaw other lands lying at a diſtance, ſo that the Spitzbergen plainly appeared to be ſurrounded by water on that ſide, and not joined to the continent of Aſia, as former navigators had ſuppoſed. The north and weſt coaſts alſo he explored, but was prevented by the ice from ſailing ſo far to the northward as he wiſhed. The coaſt appeared neither habitable nor acceſſible. It is formed of high, barren, black rocks, without the leaſt marks of vegetation; in many places bare and pointed; in others covered with ſnow, appearing even above the clouds. The valleys between the high cliffs were filled with ſnow and ice. "This proſpect," ſays Capt. Phipps, "would have ſuggeſted the idea of perpetual winter, had not the mildneſs of the weather, the ſmooth water, bright ſun-ſhine, and conſtant day-light, given a cheerfulneſs and novelty to the whole of this romantic ſcene." The current ran along this coaſt half a knot an hour, north. The height of one mountain ſeen here was found by geometrical menſuration to be at one time $1503\frac{1}{2}$ feet, at another $1503\frac{8}{10}$ feet. By a barometer conſtructed after De Luc's method, the height was found to be $1588\frac{1}{2}$ feet. On this occaſion Captain Phipps has the following remarks. "I cannot account for the great difference between the geometrical meaſure and the barometrical according to M. de Luc's calculation, which amounts to 84.7 feet. I have no reaſon to doubt the accuracy of Dr Irving's obſervations, which were made with great care. As to the geometrical meaſure, the agreement of ſo many triangles, each of which muſt have diſcovered even the ſmalleſt error, is the moſt ſatisfactory proof of its correctneſs. Since my return I have tried both the theodolite and barometer, to diſcover whether there was any fault in either; and find them, upon trial, as I had always done before, very accurate."

There is good anchorage in Schmeerenburgh harbour, lying in N. Lat. 74° 44′ E. Long. 9° 50′ 45″, in 13 fathom, ſandy bottom, not far from the ſhore, and well ſheltered from all winds. Cloſe to this harbour is an iſland called *Amſterdam Iſland*, where the Dutch uſed formerly to boil their whale-oil; and the remains of ſome conveniency erected by them for that purpoſe pupoſe are ſtill viſible. The Duch ſhips ſtill reſort to this place for the latter ſeaſon of the whale-fiſhery. —The ſtone about this place is chiefly a kind of marble, which diſſolves eaſily in the marine acid. There were no appearances of minerals of any kind, nor any ſigns of ancient and modern volcanoes. No inſects, or any ſpecies of reptiles, were ſeen, not even the common earth-worm. There were no ſprings or rivers; but great plenty of water was produced from the ſnow which melted on the mountains.

The moſt remarkable views which theſe dreary regions preſent are thoſe called *Icebergs*. They are large bodies of ice filling the valleys between the high mountains. Their face towards the ſea is nearly perpendicular, and of a very lively light-green colour. One was about 300 feet high, with a caſcade of water iſſuing from it. The black mountains on each ſide, the white ſnow, and greeniſh coloured ice, compoſed a very beautiful and romantic picture. Large pieces frequently broke off from the icebergs, and fell with great noiſe into the water. One piece was obſerved to have floated out into the bay, and grounded in 24 fathoms; it was 50 feet high above the ſurface of the water, and of the ſame beautiful colour with the iceberg from which it had ſeparated.

Theſe iſlands are totally uninhabited, though it doth not appear but that human creatures could ſubſiſt on them, notwithſtanding their vicinity to the pole. Eight Engliſh ſailors, who were accidentally left here by a whale-fiſhing ſhip, ſurvived the winter, and were brought home next ſeaſon. The Dutch then attempted to ſettle a colony on Amſterdam iſland abovementioned; but all the people periſhed, not through the ſeverity of the climate, but of the ſcurvy, owing to the want of thoſe remedies which are now happily diſcovered, and which are found to be ſo effectual in preventing and curing that dreadful diſeaſe.—The late acccount alſo of ſix Ruſſian ſailors who ſtaid four years in this inhoſpitable country, affords a deciſive proof, that a colony might be ſettled on Eaſt Greenland, provided the doing ſo could anſwer any good purpoſe.

Greenland Company. A joint ſtock of 40,000l. was by ſtatute to be raiſed by ſubſcribers, who were incorporated for 14 years from the firſt of October 1693, and the company to uſe the trade of catching whales, &c. into and from Greenland, and the Greenland ſeas; they may make bye-laws for the government of the perſons employed in their ſhips, &c. Stat. 4 and 5 W. III. cap. 17. This company was farther encouraged by parliament in 1696; but partly by unſkilful management, and partly by real loſſes, it was under a neceſſity of entirely breaking up, before the expiration of the term aſſigned to it, ending in 1707. But any perſon who will adventure to Greenland for whale-fiſhing, ſhall have all privileges granted to the Greenland company, by 1 Anne, cap. 16. and thus the trade was again laid open. Any ſubjects may import whale-fins, oil, &c. of fiſh caught in the Greenland ſeas, without paying any cuſtoms, &c. ſtat. 10 George I. cap. 16. And ſhips employed in the Greenland-fiſhery are to be of ſuch burden, provided with boats, ſo many men, fiſhing-lines, harping-irons, &c. and be licenſed to proceed; and on their return ſhall be paid 20s per ton bounty, for whale-fins, &c. imported; 6 Geo. II. cap. 33. The bounty was afterwards increaſed; but has been lately diminiſhed, and ſince this diminution the trade has increaſed. See *Whale-Fishery*.

GREENOCK, a ſea-port town in Scotland, and one of the ports of the city of Glaſgow. It is diſtant 22 miles from that city; and was formerly called the *Bay of St Laurence*. The Frith of Clyde here expands into a fine baſon four miles wide, and is landlocked on all ſides. Greenock is a burgh of barony, and the beſt built town on all the coaſt. It is the chief reſort of the herring fiſhery, and otherwiſe a place of great trade and very populous.—The harbour was made by Sir John Shaw of Greenock, whoſe anceſtor built the church; and the family had here a caſtle.

GREENWICH, a town of the county of Kent, in England, pleaſantly ſituated on the bank of the Thames, about five miles eaſt from London. Here was formerly a royal palace, built by Humphry duke of Glouceſter, enlarged by Henry VII. and completed by Henry VIII. The latter often choſe this town for his place of reſidence; as did alſo the queens Mary and Elizabeth, who were born in it. The ſame duke Humphry began a tower on the top of the ſteep hill in the park, which was finiſhed by Henry VII. but afterwards demoliſhed, and a royal obſervatory erected in its place by Charles II. furniſhed with mathematical inſtruments for aſtronomical obſervations, and a deep dry well for obſerving the ſtars in the day time. The palace being afterwards much neglected, king Charles II. (who had enlarged the park, walled it about and planted it), pulled it down, and began another, of which he lived to ſee the firſt wing magnificently finiſhed. But king William III. in 1694, granted it, with nine acres of ground thereto belonging, to be converted into a royal hoſpital for old and diſabled ſeamen, the widows and children of thoſe who loſt their lives in the ſervice, and for the encouragement of navigation. The wing, which coſt king Charles 36,000 l. is now the firſt wing of the hoſpital towards London. The front to the Thames conſiſts of two ranges of ſtone buildings, with the ranger's houſe in the centre of the area, but detached from any part of the hoſpital. Theſe buildings perfectly correſpond with each other, and have their tops crowned with a ſtone balluſtrade. The buildings which are facing the area, correſpond with them, though in a finer and more elegant ſtyle; and have domes at their ends, which are 120 feet high, ſupported on coupled columns. Under one of theſe is the hall, which is finely painted by Sir James Thornhill, and contains many royal portraits; and under the other the chapel, which by accident was deſtroyed by fire. This fire broke out in the hoſpital on the ſecond of January 1779, and totally conſumed the dome at the S. E. quarter of the building, with the chapel which was the moſt elegant in the world, the great dining-hall, and eight wards containing the lodgings of near 600 penſioners. The dome was rebuilt about the year 1785; but the reparation of the whole damage is not yet completed. On the ſides of the grate which open to theſe buildings from the park, are placed a large terreſtrial and celeſtial globe, in which the ſtars are gilt; and in the centre of the area is a ſtatue of George II. About 2000 old diſabled ſeamen are maintained in this hoſpital. Beſides private benefactions, to the amount of near L. 60,000 (which appear in tables hung up at the entrance of the hall), the parliament, in the year

1732, ſettled upon it the earl of Derwent water's eſtate, to the value of L. 6000 *per annum.* All ſtrangers who ſee it, pay twopence each; and this income is applied to the ſupport of the mathematical ſchool for the ſons of ſailors. For the better ſupport of which, every ſeaman in the royal navy, and in the merchant ſervice, pays ſixpence a month, ſtopped out of their pay, and delivered in at the ſix-penny receiver's office in Tower-hill. On this account, a ſeaman, who can produce an authentic certificate of his being diſabled, and rendered unfit for ſervice, by defending any ſhip belonging to his Majeſty's Britiſh ſubjects, or in taking any ſhip from the enemy, may be admitted into this hoſpital, and receive the ſame benefit from it as if he had been in his Majeſty's immediate ſervice. Beſides the ſeamen and widows abovementioned, about 100 boys, the ſons of ſeamen, are bred up for the ſervice of the royal navy; but there are no out-penſioners as at Chelſea. Each of the mariners has a weekly allowance of ſeven loaves, weighing 16 ounces each; three pounds of beef, two of mutton, a pint of peaſe, a pound and a quarter of cheeſe, two ounces of butter, fourteen quarts of beer, and one ſhilling a-week tobacco money: the tobacco-money of the boatſwains is two ſhillings and ſixpence a-week each, that of their mates one ſhilling and ſixpence, and that of the other officers in proportion to their rank: beſides which, each common penſioner receives once in two years, a ſuit of blue cloathes, a hat, three pair of ſtockings, two pair of ſhoes, five neckcloths, three ſhirts, and two night caps. Out of all that is given for ſhowing the hall, only three-pence in the ſhilling is allowed to the perſon that ſhows them; the reſt makes an excellent fund for the yearly maintenance of not leſs than 20 poor boys, who are the ſons of mariners that have been either ſlain or diſabled in the ſervice of their country. The park is well ſtocked with deer, and affords as much variety, in proportion to its ſize, as any in the kingdom: but the views from the Obſervatory and the One-tree hill are beautiful beyond imagination, particularly the former. The projection of theſe hills is ſo bold, that you do not look down upon a gradually falling ſlope or flat incloſures, but at once upon the tops of branching trees, which grow in knots and clumps out of deep hollows and imbrowned dells. The cattle which feed on the lawns, which appear in breaks among them, ſeem moving in a region of fairy land. A thouſand natural openings among the branches of the trees break upon little pictureſque views of the ſwelling turf, which, when illumined by the ſun, have an effect pleaſing beyond the power of fancy to paint. This is the foreground of the landſcape: a little farther, the eye falls on that noble ſtructure the hoſpital, in the midſt of an amphitheatre of wood; then the two reaches of the river make that beautiful ſerpentine which forms the Iſle of Dogs, and preſent the floating millions of the Thames. To the left appears a fine tract of country, leading to the capital, which there finiſhes the proſpect. The pariſh-church of Greenwich, rebuilt by the commiſſioners for erecting the 50 new churches, is a very handſome ſtructure, dedicated to St Alphage, archbiſhop of Canterbury, who is ſaid to have been ſlain by the Danes in the year 1012 on the ſpot where the church now ſtands. There is a college at the end of the town, fronting the Thames, for the maintenance of 20 decayed old houſe-keepers, 12 out of Greenwich, and eight who are to be alternately choſen from Snottiſham and Caſtle-Riſing in Norfolk. This is called *the duke of Norfolk's College*, though it was founded and endowed in 1613 by Henry earl of Northampton the duke of Norfolk's brother, and by him committed to the care of the Mercers company. To this college belongs a chapel, in which the earl's body is laid; which, as well as his monument, was removed hither a few years ago from the chapel of Dover caſtle. The penſioners, beſides meat, drink, and lodging, are allowed one ſhilling and ſixpence a week, with a gown every year, linen once in two years, and hats once in four years. In 1560, Mr Lambard, author of the Perambulation of Kent, alſo built an hoſpital, called queen Elizabeth's college, ſaid to be the firſt erected by an Engliſh Proteſtant. There are likewiſe two charity-ſchools in this pariſh. The river Thames is here very broad, and the channel deep; and at ſome very high tides the water is ſalt. This is the chief harbour for the king's yachts. The town contains about 1500 houſes; and a market on Wedneſday and Saturday was erected here in 1737; the direction of which is in the governors of the royal hoſpital, to which the profits ariſing from it were to be appropriated.

GREGARIOUS, among zoologiſts, a term applied to ſuch animals as do not live ſolitary, but aſſociate in herds or flocks.

GREGORIAN CALENDAR, that which ſhows the new and full moon, with the time of Eaſter, and the moveable feaſts depending thereon, by means of epacts diſpoſed through the ſeveral months of the Gregorian year. See CHRONOLOGY, n° 24.

GREGORIAN Teleſcope. See OPTICS, (Index.)

GREGORIAN Year. See CHRONOLOGY, n° 24.

GREGORY the Great, was born at Rome, of a patrician family. He diſcovered ſuch abilities in the exerciſe of the ſenatorial employments, that the emperor Juſtin the younger appointed him prefect of Rome. Pope Pelaſgius II. ſent him nuncio to Conſtantinople, to demand ſuccours againſt the Lombards. When he thought of enjoying a ſolitary life, he was elected pope by the clergy, the ſenate, and the people of Rome. Beſides his learning and diligence in inſtructing the church, both by wirting and preaching, he had a very happy talent in winning over princes in favonr of the temporal as well as ſpiritual intereſt of religion. He undertook the converſion of the Engliſh, and ſent over ſome monks of his order, under the direction of Auguſtin their abbot. His morality with reſpect to the chaſtity of churchmen was very rigid, aſſerting that a man who had ever known a woman ought not to be admitted to the prieſthood; and he always cauſed the candidates for it to be examined upon that point. He likewiſe vigorouſly exerted himſelf againſt ſuch as were found guilty of calumny. However, he flattered the emperor Phocas, while his hands were yet reeking with the blood of Mauritius, and of his three children, who had been butchered in his ſight. He likewiſe flattered Brunehaut, a very wicked queen of France. He is accuſed of deſtroying the noble monuments of ancient Roman magnificence, that thoſe who viſited the city might not attend more to the triumphal arches than to holy things; and burnt a multitude of heathen books, Livy in particular. He died in 604.

GREGORY of Nazianzen, ſirnamed the *Divine*, was one

one of the moſt illuſtrious ornaments of the Greek church in the fourth age. He was made biſhop of Conſtantinople in 379; but finding his election conteſted by Timotheus archbiſhop of Alexandria, he voluntarily reſigned his dignity about 382, in the general council of Conſtantinople. His works are extant, in two volumes, printed at Paris in 1602. His ſtyle is ſaid to be equal to that of the moſt celebrated orators of ancient Greece.

Gregory (Theodorus), ſurnamed *Thaumaturgus* on account of his miracles, was the ſcholar of Origen; and was elected biſhop of Neocæſarea, the place of his birth, about the year 240, during his abſence. He aſſiſted at the council of Antioch, in 255, againſt Paulus Samoſetanus; and died in 270. He had the ſatisfaction of leaving only ſeventeen idolaters in his dioceſe, where there were but ſeventeen Chriſtians when he was ordained. There is ſtill extant of his, A gratulatory oration to Origen, A canonical epiſtle, and ſome other works.

Gregory, biſhop of Nyſſa, one of the fathers of the church, and author of the Nicene creed, was born in Cappadocia, about the year 331. He was choſen biſhop of Nyſſa in 372, and baniſhed by the emperor Valens for adhering to the council of Nice. He was nevertheleſs afterwards employed by the biſhops in ſeveral important affairs, and died in 396. He wrote Commentaries on the Scriptures; Sermons on the myſteries; Moral diſcourſes; Dogmatical treatiſes; Panegyrics on the ſaints; ſome letters on church-diſcipline; and other works. His ſtyle is very allegorical and affected.

Gregory *of Tours*, or *Georgius Florentius Gregorius*, one of the moſt illuſtrious biſhops and celebrated writers of the ſixth century, was deſcended from a noble family in Auvergne. He was educated by his uncle Gallus, biſhop of Clermont; and diſtinguiſhed himſelf ſo much by his learning and virtue, that in 572 he was choſen biſhop of Tours. He afterwards went to Rome to viſit the tomb of the apoſtles, where he contracted a friendſhip with Gregory the Great, and died in 595. This author was extremely credulous with regard to miracles. He wrote, 1. The hiſtory of France. 2. The lives of the ſaints; and other works. The beſt edition is that publiſhed by Father Rumart, 1699.

From Memoirs of the Gregories, prefixed to the new edition of the *Works of Dr James Gregory*, in 4 vols.

Gregory (James), one of the moſt eminent mathematicians of the laſt century, was a ſon of the Rev. Mr John Gregory miniſter of Drumoak in the county of Aberdeen, and was born at Aberdeen in 1638. His mother was a daughter of Mr David Anderſon of Finzaugh, a gentleman who poſſeſſed a ſingular turn for mathematical and mechanical knowledge. This mathematical genius was hereditary in the family of the Anderſons, and from them ſeems to have been tranſmitted to their deſcendants of the name of Gregory. Alexander Anderſon, couſin german of the abovementioned David, was profeſſor of mathematics at Paris in the beginning of the 17th century, and publiſhed there in 1612, *Supplementum Apollonii redivivi, &c.* The mother of James Gregory inherited the genius of her family; and obſerving in her ſon, while yet a child, a ſtrong propenſity to mathematics, ſhe inſtructed him herſelf in the elements of that ſcience. He received his education in the languages at the grammar ſchool of Aberdeen, and went through the uſual courſe of academical ſtudies in the Mariſchal college.

At the age of 24 he publiſhed his treatiſe, intitled *Optica Promota, ſeu abdita radiorum reflexorum et refractorum myſteria, geometrice enucleata; cui ſubnectitur appendix ſubtiliſſimorum aſtronomiæ problematon reſolutionem exhibens*, London 1663: a work of great genius, in which he gave the world an invention of his own, and one of the moſt valuable of the modern diſcoveries, the conſtruction of the reflecting teleſcope. This diſcovery immediately attracted the attention of the mathematicians, both of Britain and other countries, who were ſoon convinced of its great importance to the ſciences of optics and aſtronomy. The manner of placing the two ſpecula upon the ſame axis appearing to Sir Iſaac Newton to be attended with the diſadvantage of loſing the central rays of the larger ſpeculum, he propoſed an improvement on the inſtrument, by giving an oblique poſition to the ſmaller ſpeculum, and placing the eye-glaſs in the ſide of the tube. But it is worth remarking, that the Newtonian conſtruction of that inſtrument was long abandoned for the original or Gregorian, which is at this day univerſally employed where the inſtrument is of a moderate ſize; though Mr Herſchel has preferred the Newtonian form of the conſtruction of thoſe immenſe teleſcopes, which of late years he has ſo ſucceſsfully employed in obſerving the heavens.

Ibid.

The univerſity of Padua being at that time in high reputation for mathematical ſtudies, James Gregory went thither ſoon after the publication of his firſt work; and fixing his reſidence there for ſome years, he publiſhed, in 1667, *Vera Circuli et Hyperboles quadratura*; in which he propounded another diſcovery of his own, the invention of an infinitely converging ſeries for the areas of the circle and hyperbole. To this treatiſe, when republiſhed in 1668, he added a new work, intitled, *Geometriæ pars univerſalis, inſerviens quantitatum curvarum tranſmutationi et menſuræ*; in which he is allowed to have ſhown, for the firſt time, a method for the tranſmutation of curves. Theſe works engaged the notice, and procured Mr Gregory the correſpondence, of the greateſt mathematicians of the age, Newton, Huygens, Halley, and Wallis; and their author being ſoon after choſen a fellow of the royal ſociety of London, contributed to enrich the Philoſophical Tranſactions at that time by many excellent papers. Through this channel, in particular, he carried on a diſpute with Mr Huygens, upon the occaſion of his treatiſe on the quadrature of the circle and hyperbole, to which that able mathematician had ſtarted ſome objections. Of this controverſy, it is unneceſſary to enter into particulars. It is ſufficient to ſay, that, in the opinion of Leibnitz, who allows Mr Gregory the higheſt merit for his genius and diſcoveries, Mr Huygens has pointed out, though not errors, ſome conſiderable deficiencies in the treatiſe above mentioned, and ſhown a much ſimpler method of attaining the end in view.

In 1668, Mr James Gregory publiſhed at London another work, intitled *Exercitationes Geometricæ*, which contributed ſtill to extend his reputation. About this time he was elected profeſſor of mathematics in the univerſity of St Andrew's; an office which he held for ſix years. During his reſidence there, he married, in 1669, Mary, the daughter of George Jameſon the celebrated painter, whom Mr Walpole has termed the Vandyke of Scotland, and who was fellow-diſciple with that great artiſt in the ſchool of Rubens at Antwerp.

In 1674, he was called to Edinburgh, to fill the chair of mathematics in that univerſity. This place he had held for little more than a year, when, in October 1675, being employed in ſhowing the ſatellites of Jupiter through a teleſcope to ſome of his pupils, he was ſuddenly ſtruck with total blindneſs, and died a few days after, at the early age of 37.

He was a man of an acute and penetrating genius. His temper ſeems to have been warm, as appears from the conduct of his diſpute with Mr Huygens; and, conſcious perhaps of his own merits as a diſcoverer, he ſeems to have been jealous of loſing any portion of his reputation by the improvements of others upon his inventions.

GREGORY (David), Savilian profeſſor of aſtronomy at Oxford, whom Dr Smith has termed *ſubtiliſſimi ingenii mathematicus*, was the eldeſt ſon of Mr Gregory of Kinnairdy, brother of the abovementioned Mr James Gregory. He was born at Aberdeen in 1661, and received the earlier parts of his education in that city. He completed his ſtudies at Edinburgh; and, being poſſeſſed of the mathematical papers of his uncle, ſoon diſtinguiſhed himſelf likewiſe as the heir of his genius. In the 23d year of his age, he was elected profeſſor of mathematics in the univerſity of Edinburgh; and publiſhed, in the ſame year, *Exercitatio Geometrica de dimenſione figurarum, ſive ſpecimen methodi generalis dimetiendi quaſvis figuras*, Edinburgh, 1684, 4to. He ſaw very early the excellence of the Newtonian philoſophy; and had the merit of being the firſt who introduced it into the ſchools by his public lectures at Edinburgh. "He had (ſays Mr Whiſton*) already cauſed ſeveral of his ſcholars to keep acts, as we call them, upon ſeveral branches of the Newtonian philoſophy; while we at Cambridge, poor wretches, were ignominiouſly ſtudying the fictitious hypotheſis of the Carteſian."

Ibid.

* *Memoirs of his own Life*; I. 32.

In 1691, on the report of Dr Bernard's intention of reſigning the Savilian profeſſorſhip of aſtronomy at Oxford, David Gregory went to London; and being patroniſed by Sir Iſaac Newton, and warmly befriended by Mr Flamſtead the aſtronomer royal, he obtained the vacant profeſſorſhip, for which Dr Halley was a competitor. This rivalſhip, however, inſtead of animoſity, laid the foundation of friendſhip between theſe eminent men; and Halley ſoon after became the colleague of Gregory, by obtaining the profeſſorſhip of geometry in the ſame univerſity. Soon after his arrival in London, Mr Gregory had been elected a fellow of the royal ſociety; and, previouſly to his election into the Savilian profeſſorſhip, had the degree of doctor of phyſic conferred on him by the univerſity of Oxford (A).

In 1693 he publiſhed in the Philoſophical Tranſactions a reſolution of the Florentine problem *de Teſtudine veliformi quadribili*; and he continued to communicate to the public, from time to time, many ingenious mathematical papers by the ſame channel. In 1695, he printed at Oxford *Catoptricæ et Dioptricæ Sphæricæ Elementa*; a work which, as he informs us in his preface, contains the ſubſtance of ſome of his public lectures read, eleven years before, at Edinburgh. This valuable treatiſe was republiſhed firſt with additions by Dr William Brown, with the recommendation of Mr Jones and Dr Deſaguliers; and afterwards by the latter of theſe gentlemen, with an appendix containing an account of the Gregorian and Newtonian teleſcopes, together with Mr Hadley's tables for the conſtruction of both thoſe inſtruments. It is not unworthy of remark, that, in the end of this treatiſe, there is an obſervation which ſhows, that what is generally believed to be a diſcovery of a much later date, the conſtruction of achromatic teleſcopes, which has been carried to great perfection by Mr Dollond and Mr Ramſden, had ſuggeſted itſelf to the mind of David Gregory, from the reflection on the admirable contrivance of nature in combining the different humours of the eye. The paſſage is as follows: "Quod ſi ob difficultates phyſicas in ſpeculis idoneis torno elaborandis et poliendis, etiamnum lentibus uti oporteat, fortaſſis media diverſæ denſitatis ad lentam objectivam componendam adhibere utile foret, ut a natura factum obſervamus in oculi fabrica, ubi criſtallinus humor (fere ejuſdem cum vitro virtutis ad radios lucis refringendos) aqueo et vitreo (aquæ quoad refractionem haud abſimilibus) conjungitur, ad imaginem quam diſtincte fieri poterit, a natura nihil fruſtra moliente, in oculi fundo depingendam." Catopt. et Diopt. Sphaer. Elem. Oxon. 1695, p. 98.

In 1702 our author publiſhed at Oxford, *Aſtronomiæ Phyſicæ et Geometricæ Elementa*; a work which is accounted his maſter-piece. It is founded on the Newtonian doctrines, and was eſteemed by Sir Iſaac Newton himſelf as a moſt excellent explanation and defence of his philoſophy. In the following year he gave to the world an edition in folio of the works of Euclid in Greek and Latin; in proſecution of a deſign of his predeceſſor Dr Bernard, of printing the works of all the ancient mathematicians. In this work, although it contains all the treatiſes attributed to Euclid, Dr Gregory has been careful to point out ſuch as he found reaſon, from internal evidence, to believe to be the productions of ſome inferior geometrician. In proſecution of Dr Bernard's plan, Dr Gregory engaged, ſoon after, with his colleague Halley, in

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(A) On obtaining the above profeſſorſhip, he was ſucceeded in the mathematical chair at Edinburgh by his brother James, likewiſe an eminent mathematician; who held that office for thirty-three years, and retiring in 172[illegible] was ſucceeded by the celebrated Maclaurin. A daughter of this profeſſor James Gregory, a young lady of great beauty and accompliſhments, was the victim of an unfortunate attachment, which furniſhed the ſubject of Mallet's well known ballad of *William and Margaret*.

Another brother, *Charles*, was created profeſſor of mathematics at St Andrew's by queen Anne in 1707. This office he held with reputation and ability for thirty-two years; and, reſigning in 1739, was ſucceeded by his ſon, who eminently inherited the talents of his family, and died in 1763.

in the publication of the Conics of Apollonius; but he had proceeded but a little way in this undertaking when he died, in the 49th year of his age, at Maidenhead in Berkſhire, A. D. 1710. To the genius and abilities of David Gregory, the moſt celebrated mathematicians of the age, Sir Iſaac Newton, Dr Halley, and Dr Keill, have given ample teſtimonies. Beſides thoſe works publiſhed in his lifetime, he left in manuſcript, *A Short Treatiſe of the Nature and Arithmetic of Logarithms*, which is printed at the end of Dr Keill's tranſlation of Commandine's Euclid; and a *Treatiſe of Practical Geometry* which was afterwards tranſlated, and publiſhed in 1745, by Mr Maclaurin.

Dr David Gregory married, in 1695, Elizabeth, the daughter of Mr Oliphant of Langtown in Scotland. By this lady he had four ſons, of whom, the eldeſt, David, was appointed regius profeſſor of modern hiſtory at Oxford by king George I. and died in 1767, in an advanced age, after enjoying for many years the dignity of dean of Chriſt church in that univerſity.

Ibid.

Gregory (Dr John), profeſſor of medicine in the univerſity of Edinburgh, was the ſon of Dr James Gregory profeſſor of medicine in King's college Aberdeen, and grandſon of James the inventor of the Gregorian teleſcope. His father was firſt married to Catharine Forbes, daughter of Sir John Forbes of Monymuſk; by whom he had ſix children, moſt of whom died in infancy. He married afterwards Anne Chalmers, only daughter of the Rev. Mr George Chalmers principal of King's college, by whom he had two ſons and a daughter. John, the youngeſt of the three, was born at Aberdeen, June 3. 1724. Loſing his father when only in the 7th year of his age, the care of his education devolved on his grandfather Principal Chalmers, and on his elder brother Dr James Gregory, who, upon the reſignation of their father a ſhort time before his death, had been appointed to ſucceed him in the profeſſorſhip of medicine in King's college. He likewiſe owed much in his infant years, and during the whole courſe of his ſtudies, to the care and attention of his couſin, the celebrated Dr Reid, now of the univerſity of Glaſgow. The rudiments of our author's claſſical education he received at the grammar-ſchool of Aberdeen; and, under the eye of his grandfather, he completed in King's college, his ſtudies in the Latin and Greek languages, and in the ſciences of ethics, mathematics, and natural philoſophy. His maſter in philoſophy and mathematics was Mr Thomas Gordon, the preſent philoſophy profeſſor of King's college, who has ably filled an academical chair for above half a century.

In 1742, Mr Gregory went to Edinburgh, where the ſchool of medicine was then riſing to that celebrity which has ſince ſo remarkably diſtinguiſhed it. Here he attended the anatomical lectures of the elder Dr Monro, of Dr Sinclair on the theory of medicine, and of Dr. Rutherford on the practice. He heard likewiſe the prelections of Dr. Alſton on the materia medica and botany, and of Dr Plummer on chemiſtry. The medical ſociety of Edinburgh, inſtituted for the free diſcuſſion of all queſtions relative to medicine and philoſophy had begun to meet in 1737. Of this ſociety we find Mr Gregory a member in 1742, at the time when Dr Mark Akenſide, his fellow ſtudent, and intimate companion, was a member of the ſame inſtitution.

In the year 1745 our author went to Leyden, and attended the lectures of thoſe celebrated profeſſors Gaubius, Albinus, and Van Royen. While at this place he had the honour of receiving from the King's college of Aberdeen, his *alma mater*, who regarded him as a favourite ſon, an unſolicited degree of doctor of medicine: and ſoon after, on his return thither from Holland, he was elected profeſſor of philoſophy in the ſame univerſity. In this capacity he read lectures during the years 1747, 1748, and 1749, on the mathematics; on experimental philoſophy, and on moral philoſophy. In the end of 1749, however, he choſe to reſign his profeſſorſhip of philoſophy, his views being turned chiefly to the practice of phyſic, with which he apprehended the duties of this profeſſorſhip, occupying a great portion of his time, too much interfered. Previouſly, however, to his ſettling as a phyſician at Aberdeen, he went for a few months to the Continent; a tour, of which the chief motive was probably amuſement, though, to a mind like his, certainly not without its profit in the enlargement of ideas, and an increaſed knowledge of mankind.

Some time after his return to Scotland, Dr Gregory married, in 1752, Eliſabeth daughter of William Lord Forbes; a young lady who, to the exterior endowments of great beauty and engaging manners, joined a very ſuperior underſtanding, and an uncommon ſhare of wit. With her he received a handſome addition of fortune; and during the whole period of their union, which was but for the ſpace of nine years, enjoyed the higheſt portion of domeſtic happineſs. Of her character it is enough to ſay, that her huſband, in that admired little work, *A father's Legacy to his Daughters*, the laſt proofs of his affection for them, declares, that, "while he endeavours to point out what they ſhould be, he draws but a very faint and imperfect picture of what their mother was." The field of medical practice at Aberdeen being at that time in a great meaſure pre-occupied by his elder brother Dr James Gregory, and others of ſome note in their profeſſion, our author determined to try his fortune in London. Thither accordingly he went in 1754; and being already known by reputation as a man of genius, he found an eaſy introduction to many perſons of diſtinction both in the literary and polite world. The late George Lord Lyttleton was his friend and patron. An attachment, which was founded on a ſtriking ſimilarity of manners, of taſtes, and of diſpoſitions, grew up into a firm and permanent friendſhip; and to that nobleman, to whom Dr Gregory was wont to communicate all his literary productions, the world is indebted for the publication of the *Comparative View of the State and Faculties of Man*, which made him firſt known as an author. Dr Gregory likewiſe enjoyed the friendſhip of the late Edward Montague, Eſq; and of his lady, the celebrated champion of the Fame of Shakeſpeare againſt the cavils and calumnies of Voltaire. At her aſſemblies, or *converſazione*, the reſort of taſte and genius, our author had an opportunity of cultivating an acquaintance with many of the moſt diſtinguiſhed literary characters of the preſent times.

In 1754 Dr Gregory was choſen fellow of the royal ſociety of London; and, daily advancing in the public eſteem, it is not to be doubted, that, had he continued his reſidence in that metropolis, his profeſſional talents would have found their reward in a very extenſive practice. But the death of his brother, Dr James Gregory, in November 1755, occaſioning a vacancy in the profeſſorſhip of phyſic in king's college, Aberdeen, which he was ſolicited to fill, he returned to his native country in the beginning of the following year, and took upon him the duties of that office to which he had been elected in his abſence.

Here our author remained till the end of the year 1764, when, urged by a very laudable ambition, and preſuming on the reputation he had acquired as affording a reaſonable proſpect of ſucceſs in a more extenſive field of practice, he changed his place of reſidence for Edinburgh. His friends in that metropolis had repreſented to him the ſituation of the college of medicine as favourable to his views of filling a profeſſorial chair in that univerſity; which accordingly he obtained in 1766, on the reſignation of Dr Rutherford profeſſor of the practice of phyſic. In the ſame year he had the honour of being appointed firſt phyſician to his majeſty for Scotland on the death of Dr Whytt.

On his eſtabliſhment in the univerſity of Edinburgh, Dr Gregory gave lectures on the practice of phyſic during the years 1767, 1768, and 1769. Afterwards, by agreement with Dr Cullen, profeſſor of the theory of phyſic, theſe two eminent men gave alternate courſes of the theory and of the practice—As a public ſpeaker, Dr. Gregory's manner was ſimple, natural, and animated. Without the graces of oratory, which the ſubject he had to treat in a great degree precluded, he expreſſed his ideas with uncommon perſpicuity, and in a ſtyle happily attempered between the formality of ſtudied compoſition and the eaſe of converſation. It was his cuſtom to premeditate, for a ſhort time before entering the college, the ſubject of his lecture, conſulting thoſe authors to whom he had occaſion to refer, and marking in ſhort notes the arrangement of his intended diſcourſe: then fully maſter of his ſubject, and confident of his own powers, he truſted to his natural facility of expreſſion to convey thoſe opinions which he had maturely deliberated. The only lectures which he committed fully to writing, were thoſe introductory diſcourſes which he read at the beginning of his annual courſe, and which are publiſhed in theſe volumes under the title of *Lectures on the Duties and Qualifications of a Phyſician.* Of theſe, which were written with no view to publication, many copies were taken by his pupils, and ſome from the original manuſcript, which he freely lent for their peruſal. On hearing that a copy had been offered for ſale to a bookſeller, it became neceſſary to anticipate a fraudulent, and perhaps a mutilated publication, by authoriſing an impreſſion from a corrected copy, of which he gave the profits to a favourite pupil. Theſe lectures were firſt publiſhed in 1770, and afterwards in an enlarged and more perfect form in 1772.

In the ſame year, 1722, Dr Gregory publiſhed *Elements of the Practice of Phyſic, for the uſe of ſtudents;* a work intended ſolely for his own pupils, and to be uſed by himſelf as a text-book to be commented upon in his courſe of lectures. In an advertiſement prefixed to this work, he ſignified his intention of comprehending in it the whole ſeries of diſeaſes of which he treated in his lectures on the Practice of Phyſic; but this intention he did not live to accompliſh, having brought down the work no further than to the end of the claſs of Febrile Diſeaſes.—In his academical lectures Dr. Gregory never attempted to miſlead the ſtudent by flattering views of the perfection of the ſcience; but was, on the contrary, anxious to point out its defects; wiſely judging, that a thorough ſenſe of the imperfection of an art or ſcience is the firſt ſtep towards its improvement. In this view he was careful to expoſe the fallaciouſneſs of the ſeveral theories and hypotheſes which have had the moſt extenſive currency, and perpetually inculcated the danger of ſyſtematizing with limited experience, or an imperfect knowledge of facts. Yet in the work laſt mentioned it will appear, from the order in which he has treated of the ſeveral diſeaſes, that he did not entirely neglect the ſyſtematic arrangements of other authors. Theſe, however, he warned his pupils, that he had not adopted from any conviction of the rectitude of thoſe theories to which they referred, but only as affording that degree of method, and regularity of plan, which is found to be the beſt help to the ſtudy of any ſcience. Conſidering a rational theory of phyſic to be as yet a deſideratum, it was his object to communicate to his pupils the greateſt portion of practical knowledge, as the only baſis on which ſuch a theory could ever be reared. His method, in treating of the ſeveral diſeaſes, was firſt to mention thoſe ſymptoms which are underſtood among phyſicians to characteriſe or define a diſeaſe; proceeding from the general to the more particular ſeries of ſymptoms and their occaſional varieties; to point out accurately the *diagnoſtic* ſymptoms, or thoſe by which one diſeaſe is eſſentially diſtinguiſhed from others that reſemble it, and to mark likewiſe the *prognoſtics* by which a phyſician is enabled to conjecture of the probable event of a diſeaſe, whether favourable or otherwiſe. He then proceeded to ſpecify the various cauſes, prediſpoſing, occaſional, and proximate; accounting as far as he thought could be done on juſt principles, for the appearance of the ſeveral ſymptoms; and, finally, he pointed out the general plan of cure, the particular remedies to be employed, and the cautions requiſite in the adminiſtration of them. Thus deſirous of eſtabliſhing the ſcience of medicine upon the ſolid foundation of practice and experience; and knowing that many things aſſerted as facts by medical writers have been aſſumed on a very careleſs obſervation, while confirming a favourite theory; and that, on the other hand, many real and important facts have, from the ſame ſpirit of ſyſtem, been explained away and diſcredited; he conſtantly endeavoured, both by his precept and example, to inculcate to his pupils the neceſſity of extreme caution either in admitting or in denying medical facts, or what are commonly given as ſuch. To the deſire of enforcing this neceſſary caution is owing that multitude of queries reſpecting matters of fact, as well as matters of opinion, which occurs in the *Elements of the Practice of Phyſic.*

Dr Gregory, ſoon after the death of his wife, and, as he himſelf ſays, "for the amuſement of his ſolitary hours,"

hours," employed himſelf in the compoſition of that admirable tract, intitled, *A Father's Legacy to his Daughters;* a work which, though certainly never intended by its author for the public eye, it would have been an unwarrantable diminution of his fame, and a capricious refuſal of a general benefit to mankind, to have limited to the ſole purpoſe for which it was originally deſigned. It was, therefore, with great propriety, publiſhed after the author's death by his eldeſt ſon. This work is a moſt amiable diſplay of the piety and goodneſs of his heart, and his conſummate knowledge of human nature and of the world. It manifeſts ſuch ſolicitude for their welfare, as ſtrongly recommends the advice which he gives. He ſpeaks of the female ſex in the moſt honourable terms, and labours to increaſe its eſtimation, whilſt he plainly, yet genteelly and tenderly, points out the errors into which young ladies are prone to fall. It is particularly obſervable, in what high and honourable terms he ſpeaks of the Holy Scriptures, of Chriſtian worſhip, and faithful miniſters; how warmly he recommends to his daughters the ſerious and devout worſhip of God in public and private. He dwells largely on that temper and behaviour, which were particularly ſuited to their education, rank, and circumſtances; and recommends that gentleneſs, benevolence, and modeſty, which adorn the character of the ladies, and do particular honour to their ſex. His advices, with regard to love, courtſhip, and marriage, are peculiarly wiſe, and intereſting to them. They ſhow what careful obſervation he had made on female domeſtic conduct, and on the different effects of poſſeſſing or wanting the virtues and qualities which he recommends. There is ſomething peculiarly curious, animated, and uſeful, in his directions to them, how to judge of, and manifeſt an honourable paſſion in, and towards the other ſex, and in the very accurate and uſeful diſtinction which he makes between true and falſe delicacy. Nothing can be more ſtriking and affecting, nothing more likely to give his paternal advices their deſired effect, than the reſpectful and affectionate manner in which he mentions his lady their mother, and the irreparable loſs which he and they ſuſtained by her early death. In ſhort, in this tract, the profeſſor ſhines with peculiar luſtre as a huſband and father, and it is admirably adapted to promote domeſtic happineſs.

Theſe letters to his daughters were evidently written under the impreſſion of an early death, which Dr Gregory had reaſon to apprehend from a conſtitution ſubject to the gout, which had begun to ſhow itſelf at irregular intervals even from the 18th year of his age. His mother, from whom he inherited that diſeaſe, died ſuddenly in 1770, while ſitting at table. Dr Gregory had prognoſticated for himſelf a ſimilar death; an event of which, among his friends, he often talked, but had no apprehenſion of the nearneſs of its approach. In the beginning of the year 1773, in converſation with his ſon the preſent Dr James Gregory, the latter remarking, that having for the three preceding years had no return of a fit, he might make his account with a pretty ſevere attack at that ſeaſon; he received the obſervation with ſome degree of anger, as he felt himſelf then in his uſual ſtate of health. The prediction, however, was too true: for having gone to bed on the 9th of February 1773, with no apparent diſorder, he was found dead in the morning. His death had been inſtantaneous, and probably in his ſleep; for there was not the ſmalleſt diſcompoſure of limb or of feature,—a perfect *Euthanaſia*.

Dr Gregory, in perſon, was conſiderably above the middle ſize. His frame of body was compacted with ſymmetry, but not with elegance. His limbs were not active; he ſtooped ſomewhat in his gait; and his countenance, from a fullneſs of feature and a heavineſs of eye, gave no external indication of ſuperior power of mind or abilities. It was otherwiſe when engaged in converſation. His features then became animated, and his eye moſt expreſſive. He had a warmth of tone and of geſture which gave a pleaſing intereſt to every thing which he uttered: But, united with this animation, there was in him a gentleneſs and ſimplicity of manner, which, with little attention to the exterior and regulated forms of politeneſs, was more engaging than the moſt finiſhed addreſs. His converſation flowed with eaſe; and, when in company with literary men, without affecting a diſplay of knowledge, he was liberal of the ſtores of his mind. He poſſeſſed a large ſhare of the ſocial and benevolent affections, which, in the exerciſe of his profeſſion, manifeſted themſelves in many nameleſs, but important, attentions to thoſe under his care; attentions which, proceeding in him from an extended principle of humanity, were not ſquared to the circumſtances or rank of the patient, but ever beſtowed moſt liberally where they were moſt requiſite. In the care of his pupils, he was not ſatisfied with a faithful diſcharge of his public duties. To many of theſe, ſtrangers in the country, and far removed from all who had a natural intereſt in their concerns, it was matter of no ſmall importance to enjoy the acquaintance and countenance of one ſo univerſally reſpected and eſteemed. Through him they found an eaſy introduction to an enlarged and elegant ſociety; and, what to them was ſtill more valuable, they experienced in him a friend who was ever eaſy of acceſs, and ready to aſſiſt them to the utmoſt with his counſel and patronage.—The ſame ſpirit of philanthropy endeared him in a particular manner to his intimate friends; among whom may be ranked moſt of the Scottiſh literati of his time.—Some time after his death, the profeſſorſhip of the Theory of Medicine was beſtowed upon his eldeſt ſon the preſent Dr James Gregory; who has ſince ſucceeded to the Practical Chair, lately filled by that other moſt eminent profeſſor Dr Cullen.

GRE-HOUND. See Canis.—Among a litter of gre-hound puppies, the beſt are always thoſe which are lighteſt. Theſe will make the nimbleſt dogs as they grow up. The gre-hound is beſt for open countries where there is little covert. In theſe places there will ſometimes be a courſe after a hare of two or three miles or more, and both the dogs and the game in ſight all the while. It is generally ſuppoſed that the gre-hound bitch will beat the dog in running: but this ſeems to be an error; for the dog is both longer made, and conſiderably ſtronger, than the bitch of the ſame kind. In breeding theſe dogs, the bitch is principally to be regarded; for it is found by experience, that the beſt dog and a bad bitch will not get ſo good puppies as an indifferent dog with a good bitch. The dog and bitch ſhould be as nearly as may be of the

Gre-hound, Grenada.

Grenada,

ſame age ; and for the breeding of fine and perfect dogs, they ſhould not be more than four years old. An old bitch may be uſed with a young dog, but the puppies of a young bitch and an old dog will never be good for any thing.

The general food for a gre-hound ought to be chippings or raſpings of bread, with ſoft bones and griſtles ; and thoſe chippings ought always to be ſoaked in beef or mutton broth.

The proper exerciſe for a gre-hound is courſing him three times a-week, and rewarding him with blood ; which will animate him in the higheſt degree, and encourage him to proſecute his game. But the hare alſo ſhould ever have fair play. She ſhould have the law, as it is called ; that is, have leave to run about twelve ſcore yards before the dog is ſlipped at her, that he may have ſome difficulty in the courſe, and not pick up the game too eaſily. If he kills the hare, he muſt never be ſuffered to tear her ; but ſhe muſt be taken from him, his mouth cleaned of the wool, and the liver and lights given him by way of encouragement. Then he is to be led home, and his feet waſhed with butter and beer, and about an hour after he is to be fed.

When the dog is to be taken out to courſe, he ſhould have nothing in the morning but a toaſt and butter, and then he is to be kennelled till taken out to the field. The kennelling theſe dogs is of great uſe, always giving them ſpirit and nimbleneſs when they are let looſe : and the beſt way of managing a fine gre-hound, is never to let him ſtir out of the kennel, except at the times of feeding, walking, or courſing.

GRENADA, one of the Caribbee iſlands, lying in W. Long. 61. 40. N. Lat. 12. 0. It is the laſt of the Windward Caribbees ; and lies 30 leagues north of new Andaluſia, on the continent. According to ſome it is 24 leagues in compaſs ; according to others, only 22 ; and it is ſaid to be 30 miles in length, and in ſome places 15 in breadth. The chief port, formerly called *Louis*, now *St George's* ſtands on the weſt ſide of the iſland, in the middle of a large bay, with a ſandy bottom. It is pretended that 1000 barks, from 300 to 400 tons, may ride ſecure from ſtorms ; and that 100 ſhips, of 1000 tons each, may be moored in the harbour. A large round baſon, which is parted from it by a bank of ſand, would contain a conſiderable number of ſhips, if the bank was cut through : but by reaſon of it the large ſhips are obliged to paſs within 80 paces of one of the mountains lying at the mouth of the harbour ; the other mountain lying about half a mile diſtant. The iſland abounds with wild game and fiſh, it produces alſo very fine timber, but the cocoa-tree is obſerved not to thrive here ſo well as in the other iſlands. A lake on a high mountain, about the middle of the iſland, ſupplies it with freſh-water ſtreams. Several bays and harbours lie round the iſland, ſome of which might be fortified to great advantage ; ſo that it is very convenient for ſhipping, not being ſubject to hurricanes. The ſoil is capable of producing tobacco, ſugar, indigo, peaſe, and millet.

In 1638, M. Poincy, a Frenchman, attempted to make a ſettlement in Grenada ; but was driven off by the Caribbeans, who reſorted to this iſland in greater numbers than to the neighbouring ones, probably on account of the game with which it abounded. In 1650, Monſ. Parquet, governor of Martinico, carried over from that iſland 200 men, furniſhed with preſents to reconcile the ſavages to them ; but with arms to ſubdue them, in caſe they ſhould prove intractable. The ſavages are ſaid to have been frightened into ſubmiſſion by the number of the Frenchmen : but, according to ſome French writers, the chief not only welcomed the new-comers; but, in conſideration of ſome knives, hatchets, ſciſſars, and other toys, yielded to Parquet the ſovereignty of the iſland, reſerving to themſelves their own habitations. The Abbe Raynal informs us, that theſe firſt French coloniſts, *imagining* they had purchaſed the iſland by theſe trifles, aſſumed the ſovereignty, and ſoon acted as tyrants. The Caribbs, unable to contend with them by force, took their uſual method of murdering all thoſe whom they found in a defenceleſs ſtate. This produced a war ; and the French ſettlers having received a reinforcement of 300 men from Martinico, forced the ſavages to retire to a mountain; from whence, after exhauſting all their arrows, they rolled down great logs of wood on their enemies. Here they were joined by other ſavages from the neighbouring iſlands, and again attacked the French, but were defeated anew ; and were at laſt driven to ſuch deſperation, that 40 of them, who had eſcaped from the ſlaughter, jumped from a precipice into the ſea, where they all periſhed, rather than fall into the hands of their implacable enemies. From thence the rock was called *la morne des ſauteurs*, or " the hill of the leapers ;" which name it ſtill retains. The French then deſtroyed the habitations and all the proviſions of the ſavages; but freſh ſupplies of Caribbeans arriving, the war was renewed with great vigour and great numbers of the French were killed. Upon this they reſolved totally to exterminate the natives ; and having accordingly attacked the ſavages unawares, they inhumanly put to death the women and children, as well as the men ; burning all their boats and canoes, to cut off all communication between the few ſurvivors and the neighbouring iſlands. Notwithſtanding all theſe barbarous precautions, however, the Caribbees proved the irreconcileable enemies of the French; and their frequent inſurrections at laſt obliged Parquet to ſell all his property in the iſland to the Count de Cerillac in 1657. The new proprietor, who purchaſed Parquet's property for 30,000 crowns, ſent thither a perſon of brutal manners to govern the iſland. He behaved with ſuch inſupportable tyranny, that moſt of the coloniſts retired to Martinico ; and the few who remained condemned him to death after a formal trial. In the whole court of juſtice that tried this miſcreant, there was only one man (called *Archangeli)* who could write. A farrier was the perſon who impeached : and he, inſtead of the ſignatures, ſealed with a horſe-ſhoe ; and Archangeli, who performed the office of clerk, wrote round it theſe words in French, " Mark of Mr de la Brie, counſel for the court."

It was apprehended that the court of France would not ratify a ſentence paſſed with ſuch unuſual formalities; and therefore moſt of the judges of the governor's crime, and witneſſes of his execution, diſappeared. Only thoſe remained whoſe obſcurity ſcreened them from the purſuit of the laws. By an eſtimate, taken in 1700, there were at Grenada no more than 251 white people, 53 free ſavages or mulattoes, and 525 ſlaves. The uſeful animals were reduced to 64 horſes and 569 head of horned cattle. The whole culture conſiſted of 3 plantations of ſugar and 52 of indigo.—The iſland had been ſold in 1664 to the French Weſt India company for 100,000 livres.

This unfavourable ſtate of the affairs of Grenada was changed in 1714. The change was owing to the flouriſhing condition of Martinico. The richeſt of the ſhips from that iſland were ſent to the Spaniſh coaſts, and in their way touched at Grenada to take in refreſhments. The trading privateers, who undertook this navigation, taught the people of that iſland the value of their ſoil, which only required cultivation. Some traders furniſhed the inhabitants with ſlaves and utenſils to erect ſugar plantations. An open account was eſtabliſhed betwen the two colonies. Grenada was clearing its debts gradually by its rich produce; and the balance was on the point of being cloſed, when the war in 1744 interrupted the communication between the two iſlands, and at the ſame time ſtopped the progreſs of the ſugar-plantations. This loſs was ſupplied by the culture of coffee, which was purſued during the hoſtilities with all the activity and eagerneſs that induſtry could inſpire.—The peace of 1748 revived all the labours, and opened all the former ſources of wealth. In 1753 the population of Grenada conſiſted of 1262 white people, 175 free negroes, and 11,991 ſlaves. The cattle amounted to 2298 horſes or mules, 2456 head of horned cattle, 3278 ſheep, 902 goats, and 331 hogs. The cultivation roſe to 83 ſugar plantations, 2,725,600 coffee-trees, 150,300 cocoa-trees, and 800 cotton-plants. The proviſions conſiſted of 5,740,450 trenches of caſſada, 933,596 banana trees, and 143 ſquares of potatoes and yams. The colony made a rapid progreſs, in proportion to the excellence of its ſoil; but in the courſe of the laſt war but one, the iſland was taken by the Britiſh. At this time one of the mountains at the ſide of St George's harbour was ſtrongly fortified, and might have made a good defence, but ſurrendered without firing a gun; and by the treaty concluded in 1763 the iſland was ceded to Britain. On this ceſſion, and the management of the colony after that event, the Abbé Raynal has the following remarks.—"This long train of evils [the ambition and miſmanagement of his countrymen] has thrown Grenada into the hands of the Engliſh, who are in poſſeſſion of this conqueſt by the treaty of 1763. But how long will they keep this colony? Or, will it never again be reſtored to France?—England has not made a fortunate beginning. In the firſt enthuſiaſm raiſed by an acquiſition, of which the higheſt opinion had been previouſly formed, every one was eager to purchaſe eſtates there. They ſold for much more than their real value. This caprice, by expelling old coloniſts who were inured to the climate, has ſent about L.1,553,000 out of the mother-country. This imprudence has been followed by another. The new proprietors, miſled, no doubt, by national pride, have ſubſtituted new methods to thoſe of their predeceſſors. They have attempted to alter the mode of living among their ſlaves. The negroes, who from their very ignorance are more attached to their cuſtoms than other men, have revolted. It hath been found neceſſary to ſend out troops, and to ſhed blood. The whole colony was filled with ſuſpicions. The maſters who had laid themſelves under a neceſſity of uſing violent methods, were afraid of being burnt or maſſacred in their own plantations. The labours have declined, or been totally interrupted. Tranquillity has at length been reſtored. The number of ſlaves has been increaſed as far as 40,000, and the produce has been raiſed to the treble of what it was under the French government. The plantations will ſtill be improved by the neighbourhood of a dozen of iſlands, called the *Grenadines* or *Grenadilloes*, that are dependent on the colony. They are from three to eight leagues in circumference, but do not afford a ſingle ſpring of water. The air is wholeſome. The ground, covered only with thin buſhes, has not been ſcreened from the ſun. It exhales none of thoſe noxious vapours which are fatal to the huſbandman. Cariacou, the only one of the Grenadines, which the French have occupied, was at firſt frequented by turtle fiſhermen; who, in the leiſure afforded them by ſo eaſy an occupation, employed themſelves in clearing the ground. In proceſs of time, their ſmall number was increaſed by the acceſſion of ſome of the inhabitants of Guadaloupe; who, finding that their plantations were deſtroyed by a particular ſort of ants, removed to Cariacou. The iſland flouriſhed from the liberty that was enjoyed there. The inhabitants collected about 1200 ſlaves, by whoſe labours they made themſelves a revenue of near 20,000l. a-year in cotton.--The other Grenadines do not afford a proſpect of the ſame advantages, though the plantation of ſugar is begun there. It has ſucceeded remarkably well at Becouya, the largeſt and moſt fertile of theſe iſlands, which is no more than two leagues diſtant from St Vincent."

In the year 1779 the conqueſt of this iſland was accompliſhed by D'Eſtaign the French admiral, who had been prevented from attempting it before by his enterpriſe againſt St Vincent. Immediately after his conqueſt of St Lucia, however, being reinforced by a ſquadron under M. de la Motte, he ſet ſail for Grenada with a fleet of 26 ſail of the line and 12 frigates, having on board 10,000 land forces. Here he arrived on the ſecond of July; and landed 3000 troops, chiefly Iriſh, being part of the brigade compoſed of natives of Ireland in the ſervice of France. Theſe were conducted by Count Dillon, who diſpoſed them in ſuch a manner as to ſurround the hill that overlooks and commands George's Town, together with the fort and harbour. To oppoſe theſe, Lord M'Cartney, the governor, had only about 150 regulars, and 300 or 400 armed inhabitants; but though all reſiſtance was evidently vain, he determined nevertheleſs to make an honourable and gallant defence. The preparations he made were ſuch as induced D'Eſtaign himſelf to be preſent at the attack; and, even with his vaſt ſuperiority of force, the firſt attack on the entrenchments proved unſucceſsful. The ſecond continued two hours; when the garriſon were obliged to yield to the immenſe diſparity of numbers who aſſaulted them, after having killed or wounded 300 of their antagoniſts. Having thus made themſelves maſters of the intrenchments on the hill, the French turned the cannon of them towards the fort which lay under it; on which the governor demanded a capitulation. The terms, however, were ſo extraordinary and unprecedented, that both the governor and inhabitants agreed in rejecting them; and determined rather to ſurrender without any conditions at all than upon thoſe which appeared ſo extravagant. On this occaſion D'Eſtaign is ſaid to have behaved in a very haughty and ſevere manner; indulging his ſoldiers alſo in the moſt unwarrantable liberties, and in which they would have proceeded much farther had they not been reſtrained by the Iriſh troops in the French ſervice.

In the mean time admiral Byron, who had been conveying the homeward-bound Weſt India fleet, haſtened to St Vincent, in hopes of recovering it; but being informed, by the way, that a deſcent had been made on Grenada, he changed his courſe, hoping that Lord M'Cartney would be able to hold out till his arrival. On the ſixth of July he came in ſight of the French fleet; and without regarding D'Eſtaign's ſuperiority of ſix ſhips of the line and as many frigates, determined if poſſible to force him to a cloſe engagement. The French commander, however, was not ſo confident of his own proweſs as to run the riſk of an encounter of this kind; and having already atchieved his conqueſt, had no other view than to preſerve it. His deſigns were facilitated by the good condition of his fleet; which being more lately come out of port than that of the Britiſh, ſailed faſter, ſo that he was thus enabled to keep at what diſtance he pleaſed. The engagement began about eight in the morning, when admiral Barrington with his own and two other ſhips got up to the van of the enemy, which they attacked with the greateſt ſpirit. As the other ſhips of his diviſion, however, were not able to get up to his aſſiſtance, theſe three ſhips were neceſſarily obliged to encounter a vaſt ſuperiority, and of conſequence ſuffered exceedingly. The battle was carried on from beginning to end in the ſame unequal manner; nor were the Britiſh commanders, though they uſed their utmoſt efforts for this purpoſe, able to bring the French to a cloſe engagement. Thus captains Collingwood, Edwards, and Cornwallis, ſtood the fire of the whole French fleet for ſome time. Capt. Fanſhaw of the Monmouth, a 64 gun-ſhip, threw himſelf ſingly in the way of the enemy's van; and admiral Rowley and Captain Butchart fought at the ſame diſadvantage: ſo that finding it impoſſible to continue the engagement with any probability of ſucceſs, a general ceſſation of firing took place about noon. It recommenced in the ſame manner about two in the afternoon; and laſted, with different interruptions, till the evening. During this action ſome of the Britiſh ſhips had forced their way into St George's harbour, not imagining that the enemy were already in poſſeſſion of the iſland. They were ſoon undeceived, however, by perceiving the French colours flying aſhore, and the guns and batteries firing at them. This diſcovery put an end to the deſign which had brought on the engagement; and as it was now high time to think of providing for the ſafety of the Britiſh troops, which were in danger from the number of the enemy's frigates, the engagement was finally diſcontinued. During this action ſome of admiral Byron's ſhips had ſuffered extremely. The Lion of 64 guns, captain Cornwallis, was found incapable of rejoining the fleet which were plying to windward; and was therefore obliged to bear away alone before the wind. Two other ſhips lay far aſtern in a very diſtreſſed ſituation; but no attempt was made to capture them, nor did the French admiral ſhow the leaſt inclination to renew the engagement.

Grenada was reſtored to Great Britain by the late treaty of peace.—George's town, or St George's, is the reſidence of the governor; and the preſent governor, general Matthew, made a preſent to the citizens of a clock and bells in the ſpring of 1790. The garriſon conſiſted at that time of artillery, two regiments of Europeans, and one of blacks. As there are ſeveral ſmall iſlands ſubject to the laws enacted in Grenada, they each elect a perſon to repreſent them in the geral aſſembly, which is always held in St George's. As none of the Grenadines have a harbour fit for large veſſels, the produce of them is conveyed in ſmall veſſels to St George's, from whence it is exported to the different places of Europe, Africa, America, &c. From the number of veſſels that arrive yearly from different places, and from its being the ſeat of the legiſlature, it has become ſo populous, that two news papers are publiſhed in it. On occaſion of the late proſpect of a war with Spain, an act was paſſed here in February 1790, obliging every gentleman to give in upon oath the value of his eſtate, and the number of blacks upon it, in order that the general aſſembly might aſcertain the number of ſlaves each ſhould ſend to work upon the fortifications on Richmond-hill, near St George's.

GRENADINES, or GRENADILLOS. See the preceding article.—It is there mentioned that the Grenadines do not afford a ſingle drop of freſh water. A ſmall ſpring however has been lately diſcovered in the principal iſland Cariacou, by digging; but being of great value, it is kept locked by the proprietor Mr Mayes. The capital of that iſland is called Hilſborough, in which there is a ſmall church.

GRENAILLE, a name given by the French writers to a preparation of copper, which the Chineſe uſe as a red colour in ſome of their fineſt china, particularly for that colour which is called *oil-red*, or *red in oil*. The china-ware coloured with this is very dear. The manner in which they procure the preparation is thus: they have in China no ſuch thing as ſilver-coined money, but they uſe in commerce bars or maſſes of ſilver; theſe they pay and receive in large bargains; and among a nation ſo full of fraud as the Chineſe, it is no wonder that theſe are too often adulterated with too great an alloy of copper. They paſs, however, in this ſtate in the common payments. There are ſome occaſions, however, ſuch as the paying the taxes and contributions, on which they muſt have their ſilver pure and fine: on this occaſion they have recourſe to certain people, whoſe ſole buſineſs it is to refine the ſilver, and ſeparate it from the copper and the lead it contains. This they do in furnaces made for the purpoſe, and with very convenient veſſels. While the copper is in fuſion, they take a ſmall bruſh, and dip the end of it into water; then ſtriking the handle of the bruſh, they ſprinkle the water by degrees upon the melted copper; a ſort of pellicle forms itſelf by this means on the ſurface of the matter, which they take off while hot with pincers of iron, and immediately throwing it into a large veſſel of cold water, it forms that red powder which is called the *grenaille*; they repeat the operation every time they in this manner ſeparate the copper; and this furniſhes them with as much of the *grenaille* as they have occaſion for in their china works.

GRENOBLE, a large, populous, and ancient town of Dauphiny in France, with a biſhop's ſee. It contains a great number of handſome ſtructures, particularly the churches and convents. The leather and gloves that are made here are highly eſteemed. It is ſeated on the river Iſere, over which there are two bridges to paſs into that part called *Perriere*, a large ſtreet on the other ſide of the river. E. Long. 5. 49. N. Lat. 45. 12.

GRESHAM (Sir Thomas), an opulent merchant of London, deſcended from an ancient and honourable family of Norfolk, was born in 1519. He was, as his father had been before him, appointed king's agent at Antwerp, for taking up money of the merchants; and in 1551, he removed to that city with his family. This employment was ſuſpended on the acceſſion of queen Mary: but on proper repreſentations, was reſtored to him again. Queen Elizabeth conferred the honour of knighthood upon him, and made him her agent in foreign parts. It was at this time he thought proper to provide himſelf with a manſion-houſe in the city, ſuitable to his ſtation and dignity; with which intention he built a large houſe on the weſt ſide of Biſhopſgate-ſtreet, afterwards known by the name of *Greſham-College*. His father had propoſed building a houſe or exchange for the merchants to meet in, inſtead of walking in the open ſtreet; but this deſign remained for the ſon to accompliſh. Sir Thomas went beyond his father: he offered, if the citizens would provide a proper piece of ground, to build a houſe at his own expence; which being accepted, he fulfilled his promiſe after the plan of the exchange at Antwerp. When the new edifice was opened, the queen (Jan. 29. 1570) came and dined with the founder; and cauſed a herald with a trumpet to proclaim it by the name of the *Royal Exchange*. In purſuance alſo of a promiſe to endow a college for the profeſſion of the ſeven liberal ſciences, he made a teſtamentary diſpoſition of his houſe in London for that purpoſe; leaving one moiety of the royal exchange to the corporation of London, and the other to the mercers company, for the ſalaries of ſeven lecturers in divinity, law, phyſic, aſtronomy, geometry, muſic, and rhetoric, at 50l. each *per annum*. He left ſeveral other conſiderable benefactions, and died in 1579. As to the college, it has been pulled down within theſe 14 or 15 years, in conſequence of an application to parliament from the city, and the exciſe-office erected in its place. The lectures, are read, or rather hurried through, in a chamber over the Royal Exchange.—Thoſe who have drawn Sir Thomas's character obſerve, that he had the happineſs of a mind every way ſuited to his fortune, generous and benign: ready to perform any good actions, and encourage them in others. He was a great friend and patron of the celebrated martyrologiſt John Fox. He was well acquainted with the ancient and ſeveral modern languages; he had a very comprehenſive knowledge of all affairs relating to commerce, whether foreign or domeſtic; and his ſucceſs was not leſs, being in his time eſteemed the higheſt commoner in England. He tranſacted queen Elizabeth's mercantile affairs ſo conſtantly, that he was called *the royal merchant*; and his houſe was ſometimes appointed for the reception of foreign princes upon their firſt arrival at London.

GREVILLE (Fulke), lord Brook, of Beauchamp's Court in Warwickſhire, a poet and miſcellaneous writer, was born in the year 1554, and deſcended from the noble families of Beauchamps of Powick and Willoughby de Brook. In company with his couſin Sir Philip Sidney, he began his education at a ſchool in Shrewſbury: thence he went to Oxford, where he remained for ſome time a gentleman commoner, and then removed to Trinity-College in Cambridge. Having left the univerſity, he viſited foreign courts, and thus added to his knowledge of the ancient languages a perfect knowledge of the modern. On his return to England he was introduced to queen Elizabeth by his uncle Robert Greville, at that time in her majeſty's ſervice; and by means of Sir Henry Sidney, lord preſident of Wales, was nominated to ſome lucrative employments in that principality.

In the year 1581, when the French commiſſioners who came to treat about the queen's marriage with the duke of Anjou were ſumptuouſly entertained with tilts and tournaments, Mr Greville, who was one of the challengers, ſo ſignalized himſelf, as to "win the reputation of a moſt valiant knight." He continued a conſtant attendant at court, and a favourite with the queen to the end of her reign; during which he obtained the office of treaſurer of marine cauſes, alſo a grant of the manor of Wedgnock, and likewiſe the honour of knighthood. In this reign be was ſeveral times elected member for the county of Warwick; and from the journals of the houſe ſeems to have been a man of buſineſs, as his name frequently appears in committees.

On the acceſſion of king James I. he was inſtalled knight of the Bath; and ſoon after obtained a grant of the ruinous caſtles of Warwick, which he repaired at a conſiderable expence, and where he probably reſided during the former part of this reign; but in the year 1614, the twelfth of James I. he was made under-treaſurer, and chancellor of the exchequer, one of the privy-council, and gentleman of the bed-chamber; and in the year 1620, was raiſed to the dignity of a baron by the title of lord Brook of Beauchamp's Court. He was alſo privy-counſellor to king Charles I. in the beginning of whoſe reign he founded a hiſtory-lecture in Cambridge.

Having thus attained the age of 74, through a life of continued proſperity, univerſally admired as a gentleman and a ſcholar, he fell by the hand of an aſſaſſin, one of his own domeſtics, who immediately ſtabbed himſelf with the ſame weapon with which he had murdered his maſter. This fellow's name was Haywood; and the cauſe is ſaid to have been a very ſevere reprimand for his preſumption in upbraiding his maſter for not providing for him after his death. It ſeems he had been witneſs to Lord Brook's will, and knew the contents. Some ſay he ſtabbed him with a knife in the back, others with a ſword. This affair happened at Brook-houſe in Holborne.—Lord Brook was buried with great pomp in St Mary's church at Warwick, in his own vault, over which he had erected a monument of black and white marble, ordering at his death the

the following inſcription to be engraved upon the tomb: "Fulke Greville, ſervant to queen Elizabeth, counſellor to king James, and friend to Sir Philip Sidney. *Trophæum Peccati.*" He wrote ſeveral works both in verſe and proſe; among which are, 1. Two tragedies, Alaham and Muſtapha. 2. Treatiſe of Human Learning, &c. in verſe, folio. 3. The Life of Sir Philip Sidney. 4. An inquiſition upon Fame and Honour, in 86 ſtanzas. 6. *Cæcilia*, a collection of 109 ſongs. 7. His remains, conſiſting of political and philoſophical poems.

GREVIUS. See GRÆVIUS.

GREW (Nehemiah), a learned Engliſh writer, in the 17th century, had a conſiderable practice as a phyſician in London, and ſucceeded Mr Oldenbugh in the office of ſecretary to the royal ſociety. In this capacity purſuant to an order of council, he drew up a catalogue of the natural and artificial rarities belonging to the ſociety, under the title of *Muſæum Regalis Societatis*, &c. 1681. He alſo wrote, beſides ſeveral pieces in the Philoſophical Tranſactions, 1. The Comparative Anatomy of the Stomach and Guts, folio. 2. The Anatomy of Plants, folio. 3. *Tractatus de ſalis Cathartici natura et uſu.* 4. *Coſmologia Sacra*, or a Diſcourſe of the Univerſe as it is the Creature and Kingdom of God, folio. He died ſuddenly in 1721.

GREWIA, in botany: A genus of the polyandria order, belonging to the gynandria claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ*. The calyx is pentaphyllous; there are five petals, each with a nectariferous ſcale at the baſe; the berry is quadrilocular.

Species. 1. The occidentalis, with oval crenated leaves, has long been preſerved in many curious gardens both in England and Holland. It is a native of the Cape of Good Hope, and grows to the height of 10 or 12 feet. The ſtem and branches greatly reſemble thoſe of the ſmall leaved elm, the bark being ſmooth, and of the ſame colour with that when young. The leaves are alſo very like thoſe of the elm, and fall off in autumn. The flowers are produced ſingly along the young branches from the wings of the leaves, and are of a bright purple colour. 2. The Africana, with oval ſpear-ſhaped ſerrated leaves, is a native of Senegal in Africa, from whence its ſeeds were brought by Mr Adanſon. In Britain it riſes with a ſhrubby ſtalk five or ſix feet high, ſending out many lateral branches, with a brown hairy bark, and garniſhed with ſpear-ſhaped ſerrated leaves; but the plants have not flowered in Britain.

Culture and uſes. The firſt ſort, though a native of a warm climate, will bear the open air in Britain; only requiring to be ſheltered in a green-houſe during the winter-time. It may be propagated by cuttings or layers planted in pots filled with ſoft loamy earth. The ſecond ſort is tender, and muſt be kept conſtantly in a warm bark-ſtove. In ſummer, they require a large ſhare of the free air to be admitted to them, and ſhould have water three or four times a-week in warm weather; but in the winter they muſt be ſparingly watered.—The negroes of Senegal highly value a decoction of the bark of this laſt ſpecies, and uſe it as a never-failing remedy againſt venereal complaints.

GREY, or GRAY colour. See GRAY.

GREY (Lady Jane), a moſt illuſtrious and unfortunate lady, deſcended of the blood-royal of England by both parents, was the eldeſt daughter of Henry Grey marquis of Dorſet and Frances the daughter of Charles Brandon lord Suffolk, by Mary the dowager of Louis XII. king of France, who was the youngeſt daughter of Henry VII. king of England. She was born in the year 1537, at Broadgate, her father's ſeat in Leiceſterſhire. She diſcovered an early propenſity to all kinds of good literature; and having a fine genius improved under the tuition of Mr Elmer, ſhe made a moſt ſurpriſing progreſs in the languages, arts, and ſciences. She underſtood perfectly both kinds of philoſophy, and could expreſs herſelf very properly at leaſt in the Latin and Greek tongues; and we are informed by Sir Thomas Chaloner (in Strype's Memorials, Vol. III. p. 93.), that ſhe was well verſed in Hebrew, Chaldee, Arabic, French, and Italian; "and (he adds) ſhe played well on inſtrumental muſic, writ a curious hand, and was excellent at the needle." Chaloner alſo tells us, that ſhe accompanied her muſical inſtruments with a voice exquiſitely ſweet in itſelf aſſiſted by all the graces that art could beſtow.

In the year 1553, the dukes of Suffolk and Northumberland, who were now, after the fall of Somerſet, arrived at the height of power, began, on the decline of the king's health, to think how to prevent that reverſe of fortune which, as things then ſtood, they foreſaw muſt happen upon Edward's death. To obtain this end, no other remedy was judged ſufficient but a change in the ſucceſſion of the crown, and transferring it into their own families, by rendering Lady Jane queen. Thoſe moſt excellent and amiable qualities which had rendered her dear to all who had the happineſs to know her, joined to her near affinity to the king, ſubjected her to become the chief tool of an ambition ſo notoriouſly not her own. Upon this very account ſhe was married to lord Guilford Dudley, fourth ſon of the duke of Northumberland, without diſcovering to her the real deſign of the match; which was celebrated with great pomp in the latter end of May, ſo much to the king's ſatisfaction, that he contributed bounteouſly to the expence of it from the royal wardrobe. The young king Edward VI died in July following; and our fair ſcholar, with infinite reluctance, overpowered by the ſolicitations of her ambitious friends, allowed herſelf to be proclaimed queen of England, on the ſtrength of a deed of ſettlement extorted from that prince by her father-in-law the duke of Northumberland, which ſet aſide the ſucceſſion of queen Mary, queen Elizabeth, and Mary queen of Scots. Her regal pageantry continued but a few days. Queen Mary's undoubted right prevailed; and the unfortunate Lady Jane Grey and her huſband were committed to the Tower, and on the 13th of November arraigned and found guilty of high treaſon. On the 12th of February following they were both beheaded on Tower-hill. Her magnanimity in this dreadful cataſtrophe was aſtoniſhing. Immediately before her execution, ſhe addreſſed herſelf to the weeping multitude with amazing compoſure and coherency: ſhe acknowledged the juſtice of the law, and died in charity with that wretched world which ſhe had ſo much reaſon to execrate. Thus did the pious Mary begin her reign with the murder of an innocent young creature of 18; who for ſimplicity of manners, purity of heart, and extenſive learning, was hardly ever equalled in any age or country. But, alas! Jane was an obſtinate heretic.—A few days before her execution, Fleckenham, the queen's chaplain, with a pious intention to reſcue her poor ſoul from eternal miſery, paid her frequent viſits in the Tower, and uſed every argument in his power to convert her to the Popiſh religion: but he found her ſo much his ſuperior in argument, that he gave up the conteſt; reſigning her body to the block, and her ſoul to the devil.

Her writings are, 1. Four Latin Epiſtles; three to Bullenger, and one to her ſiſter lady Catharine. The laſt was written, the night before her execution, in a blank leaf of a Greek Teſtament. Printed in a book intitled *Epiſtolæ Helveticæ Reformatoribus, vel ad eos ſcriptæ*, &c. Tiguri, 1742, 8vo. 2. Her conference with Fleckenham. (Ballard). 3. A letter to Dr Harding, her father's chaplain. Printed in the Phœnix, vol. ii. p. 28. 4. A Prayer for her own uſe during her confinement. In Fox's acts and monuments. 5. Four Latin verſes; written in priſon with a pin. they are as follows:

> Non aliena putes, homini quæ obtingere poſſunt:
> Sors hodierna mihi, tunc erit illa tibi,
> *Jane Dudley*.
>
> Deo juvante, nil nocet livor malus;
> Et non juvante, nil juvat labor gravis.
> Poſt tenebras ſpero lucem.

6. Her ſpeech on the ſcaffold. (Ballard). It began thus: "My Lords, and you good Chriſtian people who come to ſee me die; I am under a law, and by that law, as a never-erring judge, I am condemned to die: not for any thing I have offended the queen's majeſty; for I will waſh my hands guiltleſs thereof, and deliver to my God a ſoul as pure from ſuch treſpaſs as innocence from injuſtice; but only for that I conſented to the thing I was enforced unto, conſtraint making the law believe I did that which I never underſtood," &c.—Hollinſhed, Sir Richard Baker, Bale, and Fox, tell us that ſhe wrote ſeveral other things, but do not mention where they are to be found.

Grey-Hound. See Gre-Hound.

GRIAS, in botany: A genus of the monogynia order, belonging to the polyandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is tetrapetalous; the calyx quadrifid; the ſtigma ſeſſile and cruciform; the fruit is a plum with an eight furrowed kernel. There is but one ſpecies, the cauliflora or anchovy-pear, a native of Jamaica. The leaves are nearly oval, and about three feet long. It has a ſtraight ſtem, upon the upper part of which come forth the flowers. The fruit is large, and contains a ſtone with eight furrows. Theſe fruits are eaten by the inhabitants.

GRIBALDUS (Matthew), a learned civilian of Padua, left Italy in the 16th century, in order to make a public profeſſion of the Proteſtant religion. After having been for ſome time profeſſor of the civil law at Tubingen, he was obliged to make his eſcape to avoid the puniſhment he would have incurred had he been convicted of differing from Calvin with reſpect to the doctrine of the Trinity: but he was ſeized at Berne, whence he would have met with very ſevere treatment had he not pretended to renounce his opinions; but as he relapſed again, he would certainly have been put to death, had he not died of the plague in 1664. He wrote *De methodo ac ratione ſtudendi in jure civili*; and ſeveral other works which are eſteemed.

GRIBNER (Michael Henry), a learned civilian of Germany, was born at Leipſic in 1682. After writing ſome time in the journal of Leipſic, he was made profeſſor of Law at Wittemberg: whence he paſſed to Dreſden, and was at laſt recalled to Leipſic to ſucceed M. Mencke. He died in 1734. Beſides ſeveral academical diſſertations, he wrote, 1. *Principia proceſſus judiciarii*; 2. *Principia juriſprudentiæ naturalis*, a ſmall work much eſteemed; 3. *Opuſcula juris publici et privati.*

GRIEF, or Sorrow. The influence of this paſſion on the body is very great. Its effects reſemble in ſeveral inſtances thoſe of fear, with, however, ſome variations, owing perhaps to its being in general of longer duration. Grief diminiſhes the bodily ſtrength in general, and particularly the force of the heart and circulation; as appears by the frequent ſighs and deep reſpirations which attend it, which ſeem to be neceſſary exertions, in order to promote the paſſage of the blood through the lungs. It diminiſhes perſpiration, obſtructs the menſtrual diſcharge, produces paleneſs of the ſkin, and œdematous complaints, and ſchirrus of the glandular parts. It aggravates the ſcurvy, and the malignity of putrid and contagious diſtempers, and renders people more apt to receive the infection of them. When it comes on ſuddenly, and in a great degree, it cauſes a palpitation of the heart, and renders the pulſe irregular. Blindneſs, gangrene, and ſudden death, have followed the exceſs of this ſenſation. Its effects of changing the colour of the hair are well known. Opiates, if not given in large doſes, are good cordials in this caſe.

GRIELUM, in botany: A genus of the pentagynia order, belonging to the decandria claſs of plants. The calyx is quinquefid; there are five petals; the filaments perſiſting; and there are five monoſpermous ſeed caſes.

GRIERSON (Conſtantia), born of poor parents in the county of Kilkenny in Ireland, was one of the moſt learned women on record, though ſhe died at the age of 27, in 1733. She was an excellent Greek and Latin ſcholar; and underſtood hiſtory, divinity, philoſophy, and mathematics. She proved her ſkill in Latin by her dedication of the Dublin edition of Tacitus to lord Carteret, and by that of Terence to his ſon; to whom ſhe alſo addreſſed a Greek epigram. She wrote many elegant Engliſh poems, ſeveral of which were inſerted by Mrs Barber among her own. When lord Carteret was lord lieutenant of Ireland, he obtained a patent for Mr Grierſon to be the king's printer; and to reward the uncommon merit of his wife, cauſed her life to be included in it.

GRIFFON (Gryphus, γρυψ), in the natural hiſtory of the ancients, the name of an imaginary bird of prey, of the eagle kind. They repreſented it with four legs, wings, and a beak; the upper part repreſenting an eagle, and the lower a lion: they ſuppoſed it to watch over gold mines, hidden treaſures, &c.

The animal was conſecrated to the ſun ; and the ancient painters repreſented the chariot of the ſun as drawn by griffons. M. Spanheim obſerves the ſame of thoſe of Jupiter and Nemeſis.

The griffon in Scripture is that ſpecies of the eagle called in Latin *oſſifraga*, the " oſprey ;" and פרס, of the verb פרס, *paras*, " to break."

The griffon is frequently ſeen on ancient medals ; and is ſtill borne in coat-armour. Guillim blazons it rampant ; alleging, that any very fierce animal may be ſo blazoned as well as the lion. Sylveſter, Morgan, and others, uſe the terms *ſegreiant* inſtead of rampant.

This is alſo an ornament of architecture in conſtant uſe among the Greeks, and was copied from them, with the other elegancies of architectural enrichments, by the Romans. See SPHYNX.

GRIFLEA, in botany : A genus of the monogynia order, belonging to the octandria claſs of plants ; and in the natural method ranking under the 17th order, *Calycanthemæ*. The calyx is quadrifid ; and there are four petals, one from each inciſure of it. The filaments are very long, aſcending or turning upwards ; the capſule is globoſe, ſuperior, unilocular, and polyſpermous.

GRIMALDI (Franciſco), an eminent painter, generally known by the appellation of *Bologneſe*, was born at Bologna in 1606, where he became a diſciple of Annibal Caracci, and proved an honour to that illuſtrious maſter. From the ſchool of Annibal he went to complete his ſtudies at Rome, and improved himſelf daily, by copying the works of thoſe artiſts in which he obſerved the greateſt excellence, until his ſuperior talents recommended him to the favour of Innocent X. who afforded him immediate opportunities of exerting his genius in the gallery of his palace at Monte Cavallo, and alſo in the Vatican. The merit of his performances very ſoon engaged the attention and applauſe of the public, and increaſed the number of his admirers and friends ; among whom were the prince Pamphilio, and many of the principal nobility of Rome. His reputation reached cardinal Mazarine at Paris, who ſent for him, ſettled a large penſion on him, and employed him for three years in embelliſhing his palace and the Louvre, by the order of Louis XIII. The troubles of the ſtate, and the clamours raiſed againſt the cardinal, whoſe party he warmly eſpouſed, put him ſo much in danger, that his friends adviſed him to retire among the Jeſuits. He did ſo, and was of uſe to them ; for he painted them a decoration for the expoſition of the ſacrament during the holy days, according to the cuſtom of Rome. This piece was mightily reliſhed at Paris : the king honoured it with two viſits, and commanded him to paint ſuch another for his chapel at the Louvre. Grimaldi after that returned to Italy ; and at his arrival at Rome found his great patron Innocent X. dead : but his two ſucceſſors Alexander VII. and Clement IX. honoured him equally with their friendſhip, and found him variety of employment. Grimaldi was amiable in his manners, as well as ſkilful in his profeſſion : he was generous without profuſion, reſpectful to the great without meanneſs, and charitable to the poor. The following inſtance of his benevolence may ſerve to characteriſe the man. A Sicilian gentleman, who had retired from Meſſina with his daughter during the troubles of that country, was reduced to the miſery of wanting bread. As he lived over-againſt him, Grimaldi was ſoon informed of it ; and in the duſk of the evening, knocking at the Sicilian's door, without making himſelf known, toſſed in money and retired. The thing happening more than once, raiſed the Sicilian's curioſity to know his benefactor ; who finding him out, by hiding himſelf behind the door, fell down on his knees to thank the hand that had relieved him. Grimaldi remained confuſed, offered him his houſe, and continued his friend till his death. He died of a dropſy at Rome in 1680, and left a conſiderable fortune among ſix children. The genius of Grimaldi directed him chiefly to landſcape, which he executed moſt happily. His colouring is ſtrong ; his touch light and delicate ; his ſituations are uncommonly pleaſing ; and the leafing of his trees is admirable. Sometimes, indeed, his colouring appears rather too green : but thoſe landſcapes, which he painted in the manner of the Caracci, may ſerve as models for all thoſe who admire the ſtyle of that ſchool ; and he deſigned his figures in an elegant taſte. The pictures of this maſter are very unfrequent, eſpecially thoſe of his beſt time ; and whenever they are to be purchaſed, they afford large prices. Of his children abovementioned, the youngeſt, named *Alexander*, proved a good painter, in the ſame ſtyle and taſte with his father, though very far inferior to him : ſome of the pictures of Alexander, however, are either artfully, or injudiciouſly, aſcribed to Franciſco.

GRIMSBY, a large ſea-port town of Lincolnſhire in England, 169 miles from London ; and ſaid to be the ſecond, if not the firſt, corporation in England. It had anciently three convents and a caſtle. It is governed by a mayor, high-ſteward, recorder, twelve aldermen, twelve common councilmen, two bailiffs, two coroners, a town clerk, and three ſerjeants at mace. The mayor holds a court here on Tueſday, and the bailiffs on Friday. Here are ſeveral ſtreets of good houſes, and a church that looks like a cathedral. It was a place of great trade before its harbour was choaked up ; yet the road before it is a good ſtation for ſhips that wait for a wind to get out to ſea. Its chief trade is in coals and ſalt brought by the Humber.

GRINDING, or TRITURATION, the act of breaking or comminuting a ſolid body, and reducing it into powder. See PULVERIZATION and LEVIGATION.

The painters colours are grinded on a marble or porphyry, either with oil or gum-water.

GRINDING is alſo uſed for rubbing or wearing off the irregular parts of the ſurface of a body, and reducing it to the deſtined figure, whether that be flat, concave, or the like.

The grinding and poliſhing of glaſs is a conſiderable art; for which ſee *GLASS-Grinding*. For the grinding of optical glaſſes, ſee OPTICS, the *Mechanical Part*.

GRINSTED, EAST and WEST ; two towns near Saliſbury in Wiltſhire.

GRINSTED, *Eaſt*, a town 29 miles from London, ſeated on a hill, near the borders of Surry, near Aſhdown foreſt. It has a handſome church, which was rebuilt after being burnt down 1683. On November 12, 1785, the beautiful tower having lately fallen to decay, fell down, and part lighting on the church very conſiderably damaged it. An hoſpital in the reign of king James I. for 31 poor people of this town was built and endowed with 330l. a year. It is a borough by preſcription, governed by a bailiff and his brethren; has ſent burgeſſes to parliament ever ſince the firſt of Edward II. who are elected by about 35 burgage holders; had a charter for a monthly market from Henry VII. and is generally the place for the aſſizes. The returning officer here is the bailiff, who is choſen by a jury of burgage holders. Its market is on Thurſday, and its fairs, which are well frequented, are July 13 and December 11; which laſt is a great one for Welſh runts, that are bought up here by the Kentiſh and Suſſex farmers and for fat hogs and other cattle.

GRINSTED, *Weſt*, in Suſſex, a town above 10 miles to the ſouth-weſt of Eaſt-Grinſted.

GRIPES, in medicine, a ſort of cholic or painful diſorder of the lower belly, occaſioned by ſome ſharp pungent matters vellicating the parts, or by wind pent up in the inteſtines. See *Index* ſubjoined to MEDICINE.

GRIPSWALD, a ſtrong and conſiderable town of Pomerania in Germany; formerly imperial, but now ſubject to the Swedes, with a good harbour and univerſity. E. Long. 13. 53. N. Lat. 54. 12.

GRISGRIS, a ſuperſtition greatly in vogue among the negroes in the interior parts of Africa. The griſgris, according to Le Maire, are certain Arabic characters mixed with magical figures drawn by the Marabuts or prieſts upon paper. Labat affirms, that they are nothing elſe than ſcraps of the alcoran in Arabic; but this is denied by Barbot, who brought over one of theſe griſgris to Europe, and ſhowed it to a number of perſons deeply ſkilled in oriental learning. None of theſe could find the leaſt trace of any character they underſtood. Yet, after all, this might be owing to the badneſs of the hand-writing; and the words are probably of the Mandingo language, though the characters are an attempt to imitate the Arabic. The pooreſt negro never goes to war without the griſgris, as a charm againſt wounds; and if it proves ineffectual, the prieſt transfers the blame on the immorality of his conduct. Theſe prieſts invent griſgris againſt all kinds of dangers, and in favour of all deſires and appetites; by virtue of which the poſſeſſors may obtain or avoid whatever they like or diſlike. They defend them from ſtorms, enemies, diſeaſes, pains, and misfortunes; and preſerve health, long life, wealth, honour, and merit, according to the Marabuts. No clergy in the world are more honoured and revered by the people than theſe impoſtors are by the negroes; nor are any people in the world more impoveriſhed by their prieſts than theſe negroes are, a griſgris being frequently ſold at three ſlaves and four or five oxen. The griſgris intended for the head is made in the form of a croſs, reaching from the forehead to the neck behind, and from ear to ear; nor are the arms and ſhoulders neglected. Sometimes they are planted in their bonnets in the form of horns; at other times, they are made like ſerpents, lizards, or ſome other animals, cut out of a kind of paſteboard, &c. There are not wanting Europeans, and otherwiſe intelligent ſeamen and merchants, who are in ſome degree infected with this weakneſs of the country, and believe that the negro ſorcerers have an actual communication with the devil, and that they are filled with the malignant influence of that evil ſpirit, when they ſee them diſtort their features and muſcles, make horrid grimaces, and at laſt imitate all the appearance of epileptics.

GRISONS, a people ſituated among the Alps, and allies of the Swiſs. Their country is bounded on the north by the counties of Surgans and Bludenz, the canton of Glaris, and the principality of Lichtenſtein; on the ſouth by the canton's Italian bailiwics, the county of Chavenne, and the Valteline; on the eaſt by the territories of Venice and Milan; and on the weſt by ſome of the Italian bailiwics, and the canton of Uri. It is divided into three leagues, viz. the *Griſon* or *grey league*, the *league of the houſe of God*, and that of the *ten juriſdictions*; which unite and form one republic. The two firſt lie towards the ſouth, and the third towards the north. The length of the whole is above 70 miles, and the breadth about 60. The inhabitants are ſaid to have had the name of *Griſons* from the grey coats they wore in former times. This country, lying among the Alps, is very mountainous; but the mountains yield good paſture for cattle, ſheep, and goats, with ſome rye and barley: in the valleys there is plenty of grain, pulſe, fruits, and wine. This country alſo abounds with hogs and wild-fowl; but there is a ſcarcity of fiſh and ſalt, and their horſes are moſtly purchaſed of foreigners. The principal rivers are the Rhine, the Inn, and the Adda. Here are alſo ſeveral lakes, moſt of which lie on the tops of the hills. The language of the Griſons is either a corrupt Italian or the German. Each of the leagues is ſubdivided into ſeveral leſſer communities, which are ſo many democracies; every male above 16 having a ſhare in the government of the community, and a vote in the election of magiſtrates. Deputies from the ſeveral communities conſtitute the general diet of the Griſon leagues, which meets annually, and alternately at the capital of each league; but they can conclude nothing without the conſent of their conſtituents. This country was anciently a part of Rhetia. After the extinction of the Roman empire in the weſt, it was ſome time ſubject to its own dukes, or thoſe of Swabia. Then the biſhop of Coire, and other petty princes, dependent on the emperors of Germany, became maſters of great part of it: at laſt, by the extinction of ſome, purchaſe, voluntary grants, and force, it got rid of all its lords, and erected itſelf into three diſtinct republics, each of which, as we obſerved already, is ſubdivided into a certain number of communities, which are a ſort of republics, exerciſing every branch of ſovereignty, except that of making peace or war, ſending embaſſies, concluding alliances, and enacting laws relating to the whole country, which belong to the provincial diets of the ſeveral leagues. The communities may be compared to the cities of Holland, and the diets of the ſeveral leagues to the provincial ſtates. The particular diets are compoſed of a deputy from each community; and both in them and the communities every thing is determined by a majority of votes. In the communities, every male above 16 has a vote. Beſides the annual provincial diets for chooſing the chiefs and other officers, and deliberating on the affairs of the reſpective leagues, there are general diets for what concerns all the three leagues or whole body. In both theſe, the repreſentatives can do nothing of themſelves, but are tied down to the inſtructions of their principals. There is a general ſeal for all the three leagues; and each particular league has a ſeparate ſeal. Beſides the ſtated times of meeting, extraordinary diets are ſometimes ſummoned, when either the domeſtic affairs of the ſtate or any foreign miniſter require it. In the general diets, the Grey League has 28 votes; that of the Houſe of God, 23; and that of the Ten Juriſdictions, 15. Theſe leagues, at different times, have entered into cloſe alliances with the neighbouring cantons and their aſſociates. The bailiwics belonging in common to the three leagues are thoſe of the Valteline, Chieavene, Bormio, Meyenfeld, Malans, and Jennins; the officers of which are nominated ſucceſſively by the ſeveral communities every two years. The yearly revenue ariſing to the Griſons from their bailiwics is ſaid to amount to about 13,500 florins. The public revenues altogether are but ſmall, though there are many private perſons in the country that are rich. However, in caſe of any extraordinary emergency, they tax themſelves in proportion to the neceſſity of the ſervice and the people's abilities. They have no regular troops, but a well-diſciplined militia; and upon occaſion, it is ſaid, can bring a body of 30,000 fighting men into the field: but their chief ſecurity ariſes from the narrow paſſes and high mountains by which they are ſurrounded.

Of the juriſprudence, religion, &c. of the Griſons, the following account is given by Mr Coxe in his travels in Switzerland. Throughout the three leagues the Roman law prevails, modified by the municipal cuſtoms. The courts of juſtice in each community are compoſed of the chief magiſtrate, who preſides, and a certain number of jurymen, choſen by the people: they have no regular ſalaries, but receive for their attendance a ſmall ſum, ariſing in ſome communities from the expences of the proceſs, which are defrayed by the criminals; in others from a ſhare of the fines. They enjoy the power of pardoning or diminiſhing the penalty, and of receiving a compoſition in money. This mode of proceeding ſuppoſes what is as abſurd in theory as it is contrary to experience, that judges will incline to mercy when it is their intereſt to convict; or will impartially inflict puniſhment, even when injurious to their own private advantage.—The priſoners are examined in private; frequently tortured for the purpoſe of forcing confeſſion, when the judges either divide the fines, or remit the puniſhment for a compoſition. In ſome diſtricts a criminal trial is a kind of feſtival to the judges, for whom a good repaſt is provided at the expence of the priſoner if convicted; and thus the following alluſion, in Garth's Diſpenſary, applied with more wit than truth to our courts of juſtice, is literally fulfilled:—

> 'And wretches hang, that jurymen may *dine*.'

Capital puniſhments, however, are extremely rare; a circumſtance ariſing not from a want of ſeverity in the penal ſtatutes, or from a propenſity to mercy in the judges: but becauſe the latter draw more advantages from fining than executing an offender. In a word, to uſe the expreſſion of Burnet, which is as true at preſent as it was in his time, "Many crimes go unpuniſhed, if the perſons who commit them have either great credit or much money." It is remarkable, that torture is more frequently applied, and for ſmaller delinquencies, in theſe independent republics, than in the ſubject provinces. The infliction of it depends entirely upon the arbitrary will of the judges; a majority of whom may order it for an offence which is not capital, nor even puniſhable by corporal penalties. Thus it is not uncommon, in thoſe communities where fines are divided among the judges, to torture women of looſe conduct, for the purpoſe of compelling them to confeſs with whom they have been connected; for as ſuch offences are puniſhable by fines, the more perſons are convicted, the larger ſhare of money is diſtributed among the judges for the trouble of their attendance. Even in the diſtricts where the fines are paid to the community, torture is often no leſs wantonly inflicted, becauſe, when the priſoner is not found guilty, the expences of the proceſs fall upon the public, and the judges receive little emolument. Even in the civil courts moſt cauſes are decided by bribing the judges; and appeals in thoſe communities, wherein they are admitted, ſcarcely ſerve any other end than to enlarge the ſphere of corruption; Coire, and a few other places, are excepted from this general reflection.

The religion of the Griſons is divided into catholic and reformed. The doctrines of the reformation were firſt preached about the year 1524, and received at Flæſch a ſmall village in the Ten Juriſdictions upon the confines of Sargans; from thence they were extended to Mayenfeld and Malantz, and ſoon afterwards through the whole valley of Pretigau. The new opinions ſpread with ſuch celerity, that before the end of the 16th century they were embraced by the whole league of the Ten Juriſdictions (excepting part of the community of Alvenew), the greateſt part of the Houſe of God, and a few communities in the Grey League. The difference of religion nearly excited a civil war between the two ſects, as well at the firſt introduction of the reformation as at the beginning of the troubles in the Valteline. In the latter inſtance, the two parties roſe in arms; but the Catholics being overpowered by the Proteſtants, matters were amicably adjuſted. Since that period all religious concerns have been regulated with perfect cordiality. According to the general conſent of the three leagues, each community being abſolute within its little territory, has the power of appointing its own particular worſhip, and the inhabitants are free to follow either the Catholic or Reformed perſuaſion. In the adminiſtration of civil affairs religion has no interference: the deputies of the general diet may be members of either communion, as choſen by the communities which they repreſent. By this moderate and tolerating principle, all religious diſſenſions have been ſuppreſſed as much as poſſible; and the moſt perfect amity ſubſiſts between the two ſects.

In ſpiritual concerns, the Catholics for the moſt part are under the juriſdiction of the biſhop of Coire. For the affairs of the Reformed churches, each league is divided into a certain number of diſtricts, the miniſters whereof aſſemble twice every year: theſe aſſemblies are called *colloquia*. Each colloquium has its preſident, and each league a ſuperintendant called a *dean*. The ſupreme authority in ſpiritual concerns is veſted in the ſynod, which is compoſed of the three deans, and the clergy of each league; the ſynod aſſembles every year alternately in each of the three leagues. Candidates for holy orders are examined before the ſynod. The neceſſary qualifications for admiſſion into the church ought to be the knowledge of Hebrew, Greek, and Latin; but this rule is not ſtrictly adhered to; many being ordained without the leaſt acquaintance with either of thoſe languages. Formerly Latin was ſolely uſed, as well in the debates of the ſynod as for the purpoſe of examining the candidates; but at preſent that tongue grows more and more into diſuſe, and German is employed in its ſtead.

The number of reformed pariſhes in the whole three leagues amounts to 135, in the following proportion:—In the Grey League 46, in that of God's Houſe 53, and in the League of Ten Juriſdictions 36. The miniſters of theſe churches enjoy but very ſmall ſalaries. The richeſt benefices do not perhaps yield more than L. 20, or at moſt L. 25 *per annum*, and the pooreſt ſometimes ſcarcely L. 6. This ſcanty income is attended with many inconveniences. It obliges the clergy who have families to follow ſome branch of traffic, to the neglect of their eccleſiaſtical ſtudies, and to the degradation of their profeſſional character. Another inconvenience is ſuperadded to the narrowneſs of their income. In moſt communities the miniſters, though confirmed by the ſynod, are choſen by the people of the pariſh, and are ſolely dependent on their bounty. For theſe reaſons, the candidates for holy orders are generally extremely ignorant. They cannot ſupport that expence which is requiſite to purſue their ſtudies; they are not animated with the expectation of a decent competence; and, from the dependent mode of their election, are not encouraged to deſerve their promotion by a conſiſtent dignity of character.

GRIST, in country affairs, denotes corn ground, or ready for grinding.

GRIT (argillaceous), a genus of argillaceous earth. Its texture is more or leſs porous, equable, and rough to the touch. It does not give fire with ſteel, nor effervefce with acids. When freſh broken and breathed upon, it exhales an earthy ſmell. Mr Kirwan mentions two kinds; one from Hollington near Utoxeter, of a yellowiſh or whitiſh grey, and about the ſpecific gravity of 2288. Another, from Kneperſly in Staffordſhire, is of the ſpecific gravity of 2568; and ſo unfuſible as to be uſed for fire ſtones. According to Fabroni the grit-ſtone is of greater or leſs hardneſs, moſtly of a grey, and ſometimes of a yellowiſh colour, compoſed of a ſiliceous and micaceous ſand, but rarely of a ſparry kind; with greater or ſmaller particles cloſely compacted by an argillaceous cement. It gives ſome ſparks with ſteel, is indiſſoluble for the moſt part in acids, and vitrifiable in a ſtrong fire. It is uſed for millſtones and whetſtones; and ſometimes for filtering ſtones and for building.

GROAT, an Engliſh money of account, equal to four pence. Other nations, as the Dutch, Polanders, Saxons, Bohemians, French, &c. have likewiſe their groats, groots, groches, gros, &c. In the Saxon times, no ſilver coin bigger than a penny was ſtruck in England, nor after the conqueſt, till Edward III. who, about the year 1351, coined groſſes, i. e. *groats*, or great pieces, which went for 4d. a-piece: and ſo the matter ſtood till the reign of Henry VIII. who, in 1504, firſt coined ſhillings.

Groats, in country affairs, oats after the hulls are off, or great oat-meal.

GROCERS, anciently were ſuch perſons as engroſſed all merchandize that was vendible; but now they are incorporated, and make one of the companies of the city of London, which deals in ſugar, foreign fruits, ſpices, &c.

GROENLAND, or Spitzbergen. See Greenland.

GROGRAM, a kind of ſtuff made of ſilk and mohair.

GROIN, that part of the belly next the thigh.—In the Philoſophical Tranſactions we have an account of a remarkable caſe, where a peg of wood was extracted from the groin of a young woman of 21, after it had remained 16 years in the ſtomach and inteſtines, having been accidentally ſwallowed when ſhe was about five years of age. *Vide* Vol. LXVII. p. 459.

Groin, among builders, is the angular curve made by the interſection of two ſemi-cylinders or arches; and is either regular or irregular.—A *regular* groin is when the interſecting arches, whether ſemicircular or ſemieliptical, are of the ſame diameters and heights. An *irregular* groin is where one of the arches is ſemicircular and the other ſemieliptical.

GROMWELL, in botany. See Lithospermum.

GRONINGEN, the moſt northerly of the Seven United Provinces, is bounded on the north by the German ocean; on the ſouth, by the county of Drenthe; on the eaſt, by the biſhopric of Munſter, and the principality of Eaſt-Frieſeland; and on the weſt by the province of Frieſeland, from which it is parted by the river Lawers. Its greateſt length from ſouth-eaſt to north-weſt is about 47 miles; but its breadth is very unequal, the greateſt being about 33 miles. Here are rich paſtures, large herds of great and ſmall cattle, plenty of ſea and river fiſh, and of turf, with ſome foreſts and corn-land. There are ſeveral rivers in the province, of which the principal is the Hunſe; and a great number of canals and dykes. The ſtates conſiſt of the deputies of the town of Groningen, and the Ommeland, or circumjacent country; and hold their aſſemblies always in the town of Groningen. The province had anciently governors, under the title of *burgraves*; but their power being limited, the people enjoyed great privileges. Afterwards it became ſubject to the biſhop of Utrecht; but ſhook of his yoke at laſt, and recovered its liberty. In 1536 it ſubmitted to Charles V. and in 1579 acceded to the union of Utrecht. The colleges are much the ſame here as in the other provinces, viz. the provincial ſtates, council of ſtate, provincial tribunal, and chamber of accounts. Six deputies are ſent from hence to the ſtates-general. Of the eſtabliſhed clergy there are 160 miniſters, which form ſeven claſſes, whoſe annual ſynod is held, by turns, at Groningen and Appingedam.

Groningen, the capital of the province of that name, is ſituated about 12 miles from the neareſt ſhore of the German ocean, at the conflux of ſeveral rivulets, which form the Hunſe and Fivel. Ships of conſiderable burden can come up to the city, in conſequence of which it enjoys a pretty good trade. It was formerly very ſtrong, but its fortifications are now much neglected.

The univerſity here was founded in 1615, and is well endowed out of the revenues of the ancient monaſteries. The town, which was formerly one of the Hanſe, and has ſtill great privileges, is large and populous, being the ſeat of the high colleges, and containing three ſpacious market-places, and 27 ſtreets, in which are many fine houſes, beſides churches and other public ſtructures. By the river Fivel and the Eems, it has a communication with Weſtphalia. In 1672 it made ſuch a gallant reſiſtance againſt the biſhop of Munſter, that he is ſaid to have loſt 10,000 men before it. Rodolphus Agricola and Veſelius, two of the moſt learned men of the age in which they lived, were born here. Under the juriſdiction of this city is a conſiderable diſtrict, called the *Gorecht*. E. Long. 6. 25. N. Lat. 53. 10.

GRONOVIA, in botany: a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 34th order, *Cucurbitaceæ*. There are five petals and ſtamina inſerted into a campanulated calyx; the berry is dry, monoſpermous, and inferior.

GRONOVIUS (John Frederic), a very learned critic, was born at Hamburgh in 1613; and having travelled through Germany, Italy, and France, was made profeſſor of polite learning at Deventer, and afterwards at Leyden, where he died in 1671. He publiſhed, 1. *Diatribe in Statii*, &c. 2. *De ſeſtertiis*. 3. Correct editions of Seneca, Statius, T. Livy, Pliny's Natural Hiſtory, Tacitus, Aulus Gellius, Phædrus's Fables, &c. with notes; and other works.

Gronovius (James), ſon of the preceding, and a very learned man, was educated firſt at Leyden, then went over to England, where he viſited the univerſities, conſulted the curious MSS. and formed an acquaintance with ſeveral learned men. He was choſen by the grand duke to be profeſſor at Piſa, with a conſiderable ſtipend. He returned into Holland, after he had reſided two years in Tuſcany, and conſulted the MSS. in the Medicean library. In 1679, he was invited by the curators of the univerſity to a profeſſorſhip; and his inaugural diſſertion was ſo highly approved of, that the curators added 400 florins to his ſtipend, and this augmentation continued to his death in 1716. He refuſed ſeveral honourable and advantageous offers. His principal works are, *The treaſure of Greek antiquities*, in 13 vols. folio; and a great number of diſſertations, and editions of ancient authors. He was compared to Schioppus for the virulence of his ſtyle; and the ſeverity with which he treated other great men who differed from him, expoſed him to juſt cenſure.

GROOM, a name particularly applied to ſeveral ſuperior officers belonging to the king's houſehold, as groom of the chamber, groom of the ſtole. See Stole, and Wardrobe.

Groom is more particularly uſed for a ſervant appointed to attend on horſes in the ſtable.—The word is formed from the Flemiſh *grom*, "a boy."

GROOVE, among miners, is the ſhaft or pit ſunk into the earth, ſometimes in the vein, and ſometimes not.

Groove, among joiners, the channel made by their plough in the edge of a moulding, ſtyle, or rail, to put their pannels in, in wainſcotting.

GROSS, a foreign money, in divers countries, anſwering to the Engliſh groat.

Gross is uſed among us for the quantity of twelve dozen.

Gross weight, is the weight of merchandizes and goods, with their duſt and droſs, as alſo of the bag, caſk, cheſt. &c. wherein they are contained; out of which groſs weight, allowance is to be made of tare and tret.

GROSS, or Grossus, in our ancient law writers, denotes a thing abſolute, and not depending on another. Thus, *villain in groſs*, *villanus in groſſo*, was a ſervant, who did not belong to the land, but immediately to the perſon of the lord; or a ſervile perſon not appendant or annexed to the land or manor, and to go along with the tenures as appurtenant to it; but like other perſonal goods and chattels of his lord, at his lord's pleaſure and diſpoſal.

Gross, *advowſon in*. See Advowson.

Gross-bean, in zoology, a name by which we commonly call the *coccothrauſtes*, called alſo at other times the *haw finch*. This is the *loxia coccothrauſtes* in the Linnæan ſyſtem.

Gross-beak, in ornithology; a ſpecies of Loxia.

GROSSULARIA. See Ribes.

GROTESQUE, or Grotesk, in ſculpture and painting, ſomething whimſical, extravagant, and monſtrous; conſiſting either of things that are merely imaginary, and have no exiſtence in nature; or of things ſo diſtorted, as to raiſe ſurpriſe and ridicule. The name ariſes hence, that figures of this kind were anciently much uſed to adorn the *grottos* wherein the tombs of eminent perſons or families were incloſed. Such was that of Ovid, whoſe grotto was diſcovered near Rome about one hundred years ago.

GROTIUS (Hugo), or more properly Hugo de Groot, one of the greateſt men in Europe, was born at Delft in 1583. He made ſo rapid a progreſs in his ſtudies, that at the age of 15 he had attained a great knowledge in philoſophy, divinity, and civil law; and a yet greater proficiency in polite literature, as appeared by the commentary he had made at that age on Martianus Capella. In 1598, he accompanied the Dutch ambaſſador into France, and was honoured with ſeveral marks of eſteem by Henry IV. He took his degree of doctor of laws in that kingdom; and at his return to his native country, devoted himſelf to the bar, and pleaded before he was 17 years of age. He was not 24 when he was appointed attorney-general. In 1613 he ſettled in Rotterdam, and was nominated ſyndic of that city; but did not accept of the office, till a promiſe was made him that he ſhould not be removed from it. This prudent precaution he took from his foreſeeing, that the quarrels of the divines on the doctrine of grace, which had already given riſe to many factions in the ſtate, would occaſion revolutions in the chief cities. The ſame year he was ſent into England, on account of the diviſions that reigned between the traders of the two nations, on the right of fiſhing in the northern ſeas; but he could obtain no ſatisfaction. He was afterwards ſent to England, as it is thought, to perſuade the king and the principal divines to favour the Arminians; and he had ſeveral conferences with king James on that ſubject. On his return to Holland, his attachment to Barnevelt involved him in great trouble; for he was ſeized, and ſentenced to perpetual impriſonment in 1619, and to forfeit all his goods and chattels. But after having been treated with great rigour for above a year and a half in his confinement, he was delivered by the advice and artifice of his wife, who having obſerved that his keepers had often fatigued themſelves with ſearching and examining a great trunk-full of foul-linen which uſed to be waſhed at Gorkum, but now let it paſs without opening it, ſhe adviſed him to bore holes in it to prevent his being ſtifled, and then to get into it. He complied with this advice, and was carried to a friend's houſe in Gorkum; where dreſſing himſelf like a maſon, and taking a rule and trowel, he paſſed through the market-place, and ſtepping into a boat went to Valvet in Brabant. Here he made himſelf known to ſome Arminians, and hired a carriage to Antwerp. At firſt there was a deſign of proſecuting his wife, who ſtaid in the priſon; and ſome judges were of opinion that ſhe ought to be kept there in her huſband's ſtead: however, ſhe was releaſed by a plurality of voices, and univerſally applauded for her behaviour. He now retired into France, where he met with a gracious reception from that court, and Louis XIII. ſettled a penſion upon him. Having reſided there eleven years, he returned to Holland, on his receiving a very kind letter from Frederic Henry prince of Orange: but his enemies renewing their perſecution, he went to Hamburgh; where in 1635, Queen Chriſtina of Sweden made him her counſellor, and ſent him ambaſſador into France. After having diſcharged the duties of this office above eleven years, he returned, in order to give an account to Queen Chriſtina of his embaſſy; when he took Holland in his way, and received many honours at Amſterdam. He was introduced to her Swediſh majeſty at Stockholm; and there begged that ſhe would grant his diſmiſſion, in order that he might return to Holland. This he obtained with difficulty; and the queen gave him many marks of her eſteem, though he had many enemies at this court. As he was returning, the ſhip in which he embarked was caſt away on the coaſt of Pomerania; and being now ſick, he continued his journey by land; but was forced to ſtop at Roſtock, where he died, on the 28th of Auguſt 1645. His body was carried to Delft, to be interred in the ſepulchre of his anceſtors. Notwithſtanding the embaſſies in which he was employed, he compoſed a great number of excellent works; the principal of which are, 1. A treatiſe *De jure belli et pacis*, which is eſteemed a maſter-piece. 2. A treatiſe on the truth of the Chriſtian religion. 3. Commentaries on the holy ſcriptures. 4. The Hiſtory and Annals of Holland. 5. A great number of letters. All which are written in Latin.

GROTSCAW, a town of Turkey in Europe, in the province of Servia, where a battle was fought between the Germans and Turks, in the year 1739, in which the Germans were forced to retreat with loſs. E. Long. 21. 0. N. Lat. 45. 0.

GROTSKAW, a ſtrong town of Germany, capital of a province of the ſame name in Sileſia. It is very agreeably ſeated in a fruitful plain. E. Long. 17. 35. N. Lat. 50. 42.

GROTTO, or GROTTA, a large deep cavern or den in a mountain or rock. The word is Italian, *grotta*, formed, according to Menage, &c. from the Latin *crypta*. Du cange obſerves, that *grotta* was uſed in the ſame ſenſe in the corrupt Latin.

The ancient anchorites retired into dens and grottos, to apply themſelves the more attentively to meditation.

Okey-hole, Elden-hole, Peake's-hole, and Pool's-hole are famous among the natural caverns or grottos of Britain.

The entrance to Okey-hole, on the ſouth ſide of Mendip-hills, is in the fall of thoſe hills, which is beſet all about with rocks, and has near it a precipitate deſcent of near twelve fathoms deep, at the bottom of which there continually iſſues from the rocks a conſiderable current of water. The naked rocks above the entrance ſhow themſelves about 30 fathoms high, and the whole aſcent of the hill above is about a mile, and is very ſteep. As you paſs into this vault, you go at firſt upon a level, but advancing farther, the way is found to be rocky and uneven, ſometimes aſcending, and ſometimes deſcending. The roof of this cavern, in the higheſt part, is about eight fathoms from the ground, but in many particular places it is ſo low, that a man muſt ſtoop to get along. The breadth is not leſs various than the height, for in ſome places it is five or ſix fathoms wide, and in others not more than one or two. It extends itſelf in length about two hundred yards. People talk much of certain ſtones in it, reſembling men and women, and other things; but there is little matter of curioſity in theſe, being only ſhapeleſs lumps of a common ſpar. At the fartheſt part of the cavern there is a good ſtream of water, large enough to drive a mill, which paſſes all along one ſide of the cavern, and at length ſlides down about ſix or eight fathoms among the rocks, and then preſſing through the clefts of them, diſcharges itſelf into the valley. The river within the cavern is well ſtored with eels, and has ſome trouts in it; and theſe cannot have come from without, there being ſo great a fall near the entrance. In dry ſummers, a great number of frogs are ſeen all along this cavern, even to the fartheſt part of it; and on the roof of it, at certain places, hang vaſt numbers of bats, as they do in almoſt all caverns, the entrance of which is either level, or but ſlightly aſcending or deſcending; and even in the more perpendicular ones they are ſometimes found, provided they are not too narrow, and are ſufficiently high. The cattle that feed in the paſtures through which this river runs, have been known to die ſuddenly ſometimes after a flood; this is probably owing to the waters having been impregnated, either naturally or accidentally, with lead-ore.

Elden-hole is a huge profound perpendicular chaſm, three miles from Buxton, ranked among the natural wonders of the Peak. Its depth is unknown, and is pretended to be unfathomable. Cotton tells us he ſounded 884 yards; yet the plummet ſtill drew. But he might eaſily be deceived, unleſs his plummet was very heavy; the weight of a rope of that length might well make the landing of the plummet ſcarce perceivable.

Peake's-hole, and Pool's hole, called alſo *the Devil A—ſe*, are two remarkable horizontal ſprings under mountains; the one near Caſtleton, the other juſt by Buxton. They ſeem to have owed their origin to the ſprings which have their current through them; when the water had forced its way through the horizontal fiſſures of the ſtrata, and had carried the looſe earth away with it, the looſe ſtones muſt fall down of courſe; and where the ſtrata had few or no fiſſures, they remained entire; and ſo formed theſe very irregular arches, which are now ſo much wondered at. The water which paſſes through Pool's-hole is impregnated with particles of lime-ſtone, and has incruſted the whole cavern in ſuch a manner that it appears as one ſolid rock.

In grottos are frequently found cryſtals of the rock, ſtalactites, and other natural conglaciations, and thoſe often of an amazing beauty. M. Homberg conjectures, from ſeveral circumſtances, that the marble pillars in the grotto of Antiparos vegetate or grow. That author looks on this grotto as a garden, whereof the pieces of marble are the plants; and endeavours to ſhow, that they could only be produced by ſome vegetative principle. See ANTIPAROS.

At Foligno in Italy is another grotto conſiſting of pillars and orders of architecture of marble, with their ornaments, &c. ſcarcely inferior to thoſe of art; but they all grow downwards: ſo that if this too be a garden, the plants are turned upſide down.

GROTTO *del Cani*, a little cavern near Pozzuoli, four leagues from Naples, the ſteams whereof are of a mephitical or noxious quality; whence alſo it is called *bocca venenoſa*, the poiſonous mouth. See MEPHITIS.

"Two miles from Naples (ſays Dr Mead), juſt by the Lago de Agnano, is a celebrated moſeta, commonly called *la Grotta del Cani*, and equally deſtructive to all within the reach of its vapours. It is a ſmall grotto about eight feet high, twelve long, and ſix broad; from the ground ariſes a thin, ſubtile, warm fume, viſible enough to a diſcerning eye, which does not ſpring up in little parcels here and there, but in one continued ſtream, covering the whole ſurface of the bottom of the cave; having this remarkable difference from common vapours, that it does not like ſmoke diſperſe itſelf into the air, but quickly after its riſe falls back again, and returns to the earth; the colour of the ſides of the grotto being the meaſure of its aſcent: for ſo far it is of a darkiſh-green, but higher only common earth. And as I myſelf found no inconveniency by ſtanding in it, ſo no animal, if its head be above this mark, is in the leaſt injured. But when, as the manner is, a dog, or any other creature, is forcibly kept below it; or, by reaſon of its ſmallneſs, cannot hold its head above it, it preſently loſes all motion, falls down as dead, or in a ſwoon; the limbs convulſed and trembling, till at laſt no more ſigns of life appear than a very weak and almoſt inſenſible beating of the heart and arteries; which, if the animal be left a little longer, quickly ceaſes too, and then the caſe is irrecoverable: but if it be ſnatched out, and laid in the open air, it ſoon comes to life again, and ſooner if thrown into the adjacent lake." The fumes of the grotto, the ſame author argues, are no real poiſon, but act chiefly by their gravity; elſe the creatures could not recover ſo ſoon, or if they did, ſome ſymptoms, as faintneſs, &c. would be the conſequence of it. He adds, "that in creatures killed therewith, when diſſected, no marks of infection appear; and that the attack proceeds from a want of air, by which the circulation tends to an entire ſtoppage; and this ſo much the more, as the animal inſpires a fluid of a quite different nature from the air, and ſo in no reſpect fit to ſupply its place. Taking the animal out, while yet alive, and throwing it into the neighbouring lake, it recovers: this is owing to the coldneſs of the water, which promotes the contraction of the fibres, and ſo aſſiſts the retarded circulation; the ſmall portion of air which remains in the veſiculæ, after every expiration, may be ſufficient to drive out the noxious fluid. After the ſame manner, cold water acts in a *deliquium animi:* the lake of Agnano has no greater virtue in it than others."

The ſteam ariſing in this grotto was for a long time reckoned to be of a poiſonous nature, and thought to *ſuffocate* the animals which breathed it. Dr Hales imagined that it deſtroyed the elaſticity of the air, cauſed the veſicles of the lungs to collapſe, and thus occaſioned ſudden death.—It is now, however, found that this ſteam is nothing elſe than fixed air, which from time immemorial hath iſſued out of the earth in that place in very great quantity, the cauſes of which cannot yet be inveſtigated from any of the modern diſcoveries concerning that ſpecies of air. It proves pernicious when breathed in too great quantity, by rarefying the blood too much; and hence the beſt method of recovering perſons apparently killed by fixed air, is to apply a great degree of cold all over their bodies, in order to condenſe the blood as much as poſſible. This is the reaſon why the dogs recover when thrown into the lake Agnano, as abovementioned. See the articles BLOOD and DAMPS.

GROTTA *del Serpi*, is a ſubterraneous cavern near the village of Saſſa, eight miles from the city of Braccano in Italy, deſcribed by Kircher thus: "The *grotta del ſerpi* is big enough to hold two perſons. It is perforated with ſeveral fiſtular apertures, ſomewhat in manner of a ſieve; out of which, at the beginning of the ſpring ſeaſon, iſſues a numerous brood of young ſnakes of divers colours, but all free from any particular poiſonous quality. In this cave they expoſe their lepers, paralytics, arthritics, and elephantiac patients, quite naked; where, the warmth of the ſubterraneous ſteams reſolving them into a ſweat, and the ſerpents clinging variouſly all around, licking and ſucking them, they become ſo thoroughly freed of all their vitious humours, that, upon repeating the operation for ſome time, they become perfectly reſtored."

This cave Kircher viſited himſelf; and found it warm, and every way agreeable to the deſcription given of it. He ſaw the holes, and heard a murmuring hiſſing noiſe in them. Though he miſſed ſeeing the ſerpents, it not being the ſeaſon of their creeping out; yet he ſaw a great number of their exuviæ, or ſloughs, and an elm growing hard by laden with them.

Muſeum Worm.

The diſcovery of this cave was by the cure of a leper going from Rome to ſome baths near this place. Loſing his way, and being benighted, he happened upon this cave. Finding it very warm, he pulled off his clothes; and being weary and ſleepy, had the good fortune not to feel the ſerpents about him till they had wrought his cure.

Milky GORTTO, *Crypta Lactea*, a mile diſtant from the ancient village of Bethlehem, is ſaid to have been thus denominated on occaſion of the bleſſed Virgin, who let fall ſome drops of milk in giving ſuck to Jeſus in this grotto. And hence it has been commonly ſuppoſed, that the earth of this cavern has the virtue of reſtoring milk to women that are grown dry, and even of curing fevers. Accordingly, they are always digging in it, and the earth is ſold at a good rate to ſuch as have faith enough to give credit to the fable. An altar has been built on the place, and a church juſt by it.

Grotto is alſo uſed for a little artificial edifice made in a garden, in imitation of a natural grotto. The outſides of thoſe grottos are uſually adorned with ruſtic architecture, and their inſide with ſhell-work, foſſils, &c. finiſhed likewiſe with jets d'eau or fountains, &c.

A cement for artificial grottos may be made thus: Take two parts of white roſin, melt it clear, and add to it four parts of bees wax; when melted together, add two or three parts of the powder of the ſtone you deſign to cement, or ſo much as will give the cement the colour of the ſtone; to this add one part of flower of ſulphur: incorporate all together over a gentle fire, and afterwards knead them with your hands in warm water. With this cement the ſtones, ſhells, &c. after being well dried before the fire, may be cemented.

Artificial red coral branches, for the embelliſhment of grottos, may be made in the following manner: Take clear roſin, diſſolve it in a braſs-pan; to every ounce of which add two drams of the fineſt vermilion: when you have ſtirred them well together, and have choſen your twigs and branches, peeled and dried, take a pencil and paint the branches all over whilſt the compoſition is warm; afterwards ſhape them in imitation of natural coral. This done, hold the branches over a gentle coal-fire, till all is ſmooth and even as if poliſhed. In the ſame manner white coral may be prepared with white lead, and black coral with lamp-black.

A grotto may be built with little expence, of glaſs, cinders, pebbles, pieces of large flint, ſhells, moſs, ſtones, counterfeit coral, pieces of chalk, &c. all bound or cemented together with the above deſcribed cement.

GROVE, in gardening, a ſmall wood impervious to the rays of the ſun.

Groves have been in all ages held in great veneration. The *proſeuchæ*, and high-places of the Jews, whither they reſorted for the purpoſes of devotion, were probably ſituated in groves: See Joſhuah xxiv. 26. The proſeuchæ in Alexandria, mentioned by Philo, had groves about them, becauſe he complains that the Alexandrians, in a tumult againſt the Jews, cut down the trees of their proſeuchæ.

The ancient Romans had a ſort of groves near ſeveral of their temples, which were conſecrated to ſome god, and called *luci*, by Antiphraſis, a *non lucendo*, as being ſhady and dark. The veneration which the ancient druids had for groves is well known.

Modern groves are not only great ornaments to gardens; but are alſo the greateſt relief againſt the violent heat of the ſun, affording ſhade to walk under in the hotteſt parts of the day, when the other parts of the garden are uſeleſs; ſo that every garden is defective which has not ſhade.

Groves are of two ſorts, *viz.* either open or cloſe. Open groves are ſuch as have large ſhady trees, which ſtand at ſuch diſtances, as that their branches approach ſo near to each other as to prevent the rays of the ſun from penetrating through them.

Cloſe groves have frequently large trees ſtanding in them; but the ground under theſe are filled with ſhrubs or underwood: ſo that the walks which are in them are private, and ſcreened from winds; by which means they are rendered agreeable for walking, at thoſe times when the air is either too hot or too cold in the more expoſed parts of the garden. Theſe are often contrived ſo as to bound the open groves, and frequently to hide the walls or other incloſures of the garden: and when they are properly laid out, with dry walks winding through them, and on the ſides of theſe ſweet-ſmelling ſhrubs and flowers irregularly planted, they have a charming effect.

Grove (Henry), a learned and ingenious Preſbyterian divine, was born at Taunton in Somerſetſhire, in 1683. Having obtained a ſufficient ſtock of claſſical literature, he went through a courſe of academical learning, under the Rev. Mr Warren of Taunton, who had a flouriſhing academy. He then removed to London, and ſtudied ſome time under the reverend Mr Rowe, to whom he was nearly related. Here he contracted a friendſhip with ſeveral perſons of merit, and particularly with Dr Watts, which continued till his death, though they were of different opinions in ſeveral points warmly controverted among divines. After two years ſpent under Mr Rowe, he returned into the country, and began to preach with great reputation; when an exact judgment, a lively imagination, and a rational and amiable repreſentation of Chriſtianity, delivered in a ſweet and well governed voice, rendered him generally admired; and the ſpirit of devotion which prevailed in his ſermons procured him the eſteem and friendſhip of Mrs Singer, afterwards Mrs Rowe, which ſhe expreſſed in a fine ode on death, addreſſed to Mr Grove. Soon after his beginning to preach, he married; and on the death of Mr Warren, was choſen to ſucceed him in the academy at Taunton. This obliging him to reſide there, he preached for 18 years to two ſmall congregations in the neighbourhood; and though his ſalary from both was leſs than twenty pounds a-year, and he had a growing family, he went through it cheerfully. In 1708, he publiſhed a piece, intitled, *The Regulation of Diverſions*, drawn up for the uſe of his pupils. About the ſame time, he entered into a private diſpute by letter with Dr Samuel Clarke: but they not being able to convince each other, the debate was dropped with expreſſions of great mutual eſteem. He next wrote ſeveral papers printed in the Spectator, *viz.* Numbers 588. 601. 626. 635. The laſt was republiſhed, by the direction of Dr Gibſon biſhop of London, in the Evidences of the Chriſtian Religion, by Joſeph Addiſon, Eſq. In 1725, Mr James, his partner in the academy, dying, he ſucceeded him in his paſtoral charge at Fulwood, near Taunton, and engaged his nephew to undertake the other parts of Mr James's work as tutor; and in this ſituation Mr Grove continued till his death, which happened in 1738. His great concern with his pupils, was to inſpire and cheriſh in them a prevailing love of truth, virtue, liberty, and genuine religion, without violent attachments or prejudices in favour of any party of Chriſtians. He repreſented truth and virtue in a moſt engaging light; and though his income, both as a tutor and a miniſter, was inſufficient to ſupport his family, without breaking into his paternal eſtate, he knew not how to refuſe the call of charity. Beſides the above pieces, he wrote, 1. An Eſſay towards a Demonſtration of the Soul's Immortality. 2. An Eſſay on the Terms of Chriſtian Communion. 3. The Evidence of our Saviour's Reſurrection conſidered. 4. Some Thoughts concerning the Proof of a Future State from Reaſon. 5. A Diſcourſe concerning the Nature and Deſign of the Lord's Supper. 6. Wiſdom the firſt ſpring of Action in the Deity. 7. A Diſcourſe on Saving Faith. 8. Miſcellanies in proſe and verſe. 9. Many Sermons, &c. After his deceaſe, his poſthumous works were publiſhed by ſubſcription, in four volumes octavo, with the names of near 700 ſubſcribers, among whom were ſome of the beſt judges of merit in the eſtabliſhed church.

GROUND, in painting, the ſurface upon which the figures and other objects are repreſented.

The ground is properly underſtood of ſuch parts of the piece, as have nothing painted on them, but retain the original colour upon which the other colours are applied to make the repreſentations.

A building is ſaid to ſerve as a ground to a figure when the figure is painted on the building.

The ground behind a picture in miniature, is commonly blue or crimſon, imitating a curtain of ſatin or velvet.

Ground, in etching, denotes a gummous compoſition ſmeared over the ſurface of the metal to be etched, to prevent the aquafortis from eating, except in ſuch places where this ground is cut through with the point of a needle. See the article Etching.

Ground-Angling, fiſhing under water without a float, only with a plumb of lead, or a bullet, placed about nine inches from the hook; which is better, becauſe it will roll on the ground. This method of fiſhing is moſt proper in cold weather, when the fiſh ſwim very low.

The morning and evening are the chief ſeaſons for the ground-line in fiſhing for trout; but if the day prove cloudy, or the water muddy, you may fiſh at ground all day.

Ground-Tackle, a ſhip's anchors, cables, &c. and in general whatever is neceſſary to make her ride ſafe at anchor.

Ground-Ivy, in botany. See Glechoma.

Ground-Pine, in botany. See Teucrium.

GROUNDSEL. See Senecio.

GROUP, in painting and ſculpture, is an aſſemblage of two or more figures of men, beaſts, fruits, or the like, which have ſome apparent relation to each other. See Painting.—The word is formed of the Italian *groppo*, a *knot*.

The Groups, a cluſter of iſlands lately diſcovered in the South Sea. They lie in about S. Lat. 18. 12. and W. Long. 142. 42. They are long narrow ſlips of land, ranging in all directions, ſome of them ten miles or upwards in length, but not more than a quarter of a mile broad. They abound in trees, particularly thoſe of the cocoa-nut. They are inhabited by well-made people, of a brown complexion. Moſt of them carried in their hands a ſlender pole about 14 feet in length, pointed like a ſpear; they had likewiſe ſomething ſhaped like a paddle, about four feet long. Their canoes were of different ſizes, carrying from three to ſix or ſeven people, and ſome of them hoiſted a ſail.

GROUSE, or Growse. See Tetrao.

GROUTHEAD, or Greathed (Robert), a learned and famous biſhop of Lincoln, was born at Stow in Lincolnſhire, or (according to others) at Stradbrook in Suffolk, in the latter part of the twelfth century. His parents were ſo poor, that when a boy he was reduced to do the meaneſt offices, and even to beg his bread; till the mayor of Lincoln, ſtruck with his appearance and the quickneſs of his anſwers to certain queſtions, took him into his family, and put him to ſchool. Here his ardent love of learning, and admirable capacity for acquiring it, ſoon appeared, and procured him many patrons, by whoſe aſſiſtance he was enabled to proſecute his ſtudies, firſt at Cambridge, afterwards at Oxford, and at laſt at Paris. In theſe three famous ſeats of learning, he ſpent many years in the moſt indefatigable purſuit of knowledge, and became one of the beſt and moſt univerſal ſcholars of the age. He was a great maſter not only of the French and Latin, but alſo of the Greek and Hebrew languages, which was a very rare accompliſhment in thoſe times. We are aſſured by Roger Bacon, who was intimately acquainted with him, that he ſpent much of his time for almoſt forty years in the ſtudy of geometry, aſtronomy, optics, and other branches of mathematical learning, in all which he very much excelled. Theology was his favourite ſtudy, in which he read lectures at Oxford with great applauſe. In the mean time, he obtained ſeveral preferments in the church, and was at length elected and conſecrated biſhop of Lincoln, A. D. 1235. In this ſtation he ſoon became very famous, by the purity of his manners, the popularity of his preaching, the rigour of his diſcipline, and the boldneſs with which he reproved the vices and oppoſed the arbitrary mandates of the court of Rome; of this laſt it may be proper to give one example. Pope Innocent IV. had granted to one of his own nephews named *Frederick*, who was but a child, a proviſion to the firſt canon's place in the church of Lincoln that ſhould become vacant; and ſent a bull to the archbiſhop of Canterbury, and Innocent, then papal legate in England, commanding them to ſee the proviſion made effectual; which they tranſmitted to the biſhop of Lincoln. But that brave and virtuous prelate boldly, refuſed to obey this unreaſonable mandate, and ſent an anſwer to the papal bull containing the following ſevere reproaches againſt his holineſs for abuſing his power: "If we except the ſins of Lucifer and Antichriſt, there neither is nor can be a greater crime, nor any thing more contrary to the doctrine of the goſpel, or more odious and abominable in the ſight of Jeſus Chriſt, than to ruin and deſtroy the ſouls of men, by depriving them of the ſpiritual aid and miniſtry of their paſtors. This crime is committed by thoſe who command the benefices intended for the ſupport of able paſtors, to be beſtowed on thoſe who are incapable of performing the duties of the paſtoral office. It is impoſſible therefore that the holy apoſtolic ſee, which received its authority from the Lord Jeſus Chriſt, for edification, and not for deſtruction, can be guilty of ſuch a crime, or any thing approaching to ſuch a crime, ſo hateful to God and ſo hurtful to men. For this would be a moſt manifeſt corruption and abuſe of its authority, which would forfeit all its glory, and plunge it into the pains of hell." Upon hearing this letter, his holineſs became frantic with rage, poured forth a torrent of abuſe againſt the good biſhop, and threatened to make him an object of terror and aſtoniſhment to the whole world. "How dare (ſaid he) this old, deaf, doating fool, diſobey my commands? Is not his maſter the king of England my ſubject, or rather my ſlave? Cannot he caſt him into priſon, and cruſh him in a moment?" But the cardinals by degrees brought the pope to think more calmly, and to take no notice of this letter. "Let us not (ſaid they raiſe a tumult in the church without neceſſity, and precipitate that revolt and ſeparation from us, which we know muſt one day take place." Remarkable words, when we reflect when and by whom they were ſpoken! The biſhop did not long ſurvive this noble ſtand againſt the groſs corruptions and tyranny of the church of Rome: for he fell ſick at his caſtle of Bugden that ſame year; and when he became ſenſible that his death was drawing near, he called his clergy into his apartment, and made a long diſcourſe to them, to prove that the reigning Pope Innocent IV. was Antichriſt. With this exertion his ſtrength and ſpirits were ſo much exhauſted, that he expired ſoon after, October 9. 1253. A cotemporary hiſtorian, who was perfectly well acquainted with him, hath drawn his character in the following manner. "He was a free and bold reprimander of the pope and the king; an admoniſher of the prelates; a corrector of the monks; an inſtructor of the clergy; a ſupporter of the ſtudious; a cenſurer of the incontinent; a ſcourge and terror to the court of Rome; a diligent ſearcher of the ſcriptures; and a frequent preacher to the people. At his table he was hoſpitable, polite, and cheerful. In the church he was contrite, devout, and ſolemn; and in performing all the duties of his office he was venerable, active, and indefatigable. The illuſtrious Roger Bacon, who was moſt capable, and had the beſt opportunities of forming a true judgment of the extent of his learning, by peruſing his works, and by frequently converſing with him, hath given this honourable teſtimony in his favour. "Robert Grouthead biſhop of Lincoln, and his friend friar Adam de Mariſco, are the two moſt learned men in the world, and excel all the reſt of mankind both in divine and human knowledge." This moſt excellent and learned prelate was a very voluminous writer, and compoſed a prodigious number of treatiſes on a great variety of ſubjects in philoſophy and divinity, a catalogue of which is given by Bale.

GROWTH, the gradual increaſe of bulk and ſtature that takes place in animals or vegetables, to a certain period.—The increaſe of bulk in ſuch bodies as have no life, owing to fermentations excited in their ſubſtance, or to other cauſes, is called EXPANSION, SWELLING, &c.

The growth of animals, nay even of the human ſpecies, is ſubject to great variations. A remarkable inſtance in the laſt was obſerved in France in the year 1729. At this time the Academy of Sciences examined a boy who was then only ſeven years old, and who meaſured four feet eight inches and four lines high without his ſhoes. His mother obſerved the ſigns of puberty on him at two years old, which continued to increaſe very quick, and ſoon arrived at the uſual ſtandard. At four years old he was able to lift and toſs the common bundles of hay in ſtables into the horſes racks; and at ſix years old could lift as much as a ſturdy fellow of twenty. But though he thus increaſed in bodily ſtrength, his underſtanding was no greater than is uſual with children of his age, and their play things were alſo his favourite amuſements.

Another boy, a native of the hamlet of Bouzanquet, in the dioceſe of Alais, though of a ſtrong conſtitution, appeared to be knit and ſtiff in his joints till he was about four years and a half old. During this time nothing farther was remarkable of him than an extraordinary appetite, which was ſatisfied no otherwiſe than by giving him plenty of the common aliments of the inhabitants of the country, conſiſting of rye-bread, cheſnuts, bacon, and water; but his limbs ſoon becoming ſupple and pliable, and his body beginning to expand itſelf, he grew up in ſo extraordinary a manner, that at the age of five years he meaſured four feet three inches; ſome months after, he was four feet eleven inches; and at ſix, five feet, and bulky in proportion. His growth was ſo rapid, that one might fancy he ſaw him grow: every month, his cloaths required to be made longer and wider; and what was ſtill very extraordinary in his growth, it was not preceded by any ſickneſs, nor accompanied with any pain in the groin or elſewhere. At the age of five years his voice changed, his beard began to appear, and at ſix he had as much as a man of thirty; in ſhort, all the unqueſtionable marks of puberty were viſible in him. It was not doubted in the country but this child was, at five years old, or five and a half, in a condition of begetting other children; which induced the rector of the pariſh to recommend to his mother, that ſhe would keep him from too familiar a converſation with children of the other ſex. Though his wit was riper than is commonly obſervable at the age of five or ſix years, yet its progreſs was not in proportion to that of his body. His air and manner ſtill retained ſomething childiſh, though by his bulk and ſtature he reſembled a complete man, which at firſt ſight produced a very ſingular contraſt. His voice was ſtrong and manly, and his great ſtrength rendered him already fit for the labours of the country. At the age of five years, he could carry to a good diſtance three meaſures of rye, weighing 84 pounds; when turned of ſix, he could lift up eaſily on his ſhoulders and carry loads of 150 pounds weight a good way off: and theſe exerciſes were exhibited by him as often as the curious engaged him thereto by ſome liberality. Such beginnings made people think that he would ſoon ſhoot up into a giant. A mountebank was already ſoliciting his parents for him, and flattering them with hopes of putting him in a way of making a great fortune. But all theſe hopes ſuddenly vaniſhed. His legs became crooked, his body ſhrunk, his ſtrength diminiſhed, his voice grew ſenſibly weaker, and he at laſt ſunk into a total imbecillity.

In the Paris Memoirs alſo there is an account of a girl who had her menſes at three months of age. When four years old, ſhe was four feet ſix inches in height, and had her limbs well proportioned to that height, her breaſts large and plump, and the parts of generation like thoſe of a girl of eighteen; ſo that there is no doubt but that ſhe was marriageable at that time, and capable of being a mother of children. Theſe things are more ſingular and marvellous in the northern than in the ſouthern climates, where the females come ſooner to maturity. In ſome places of the Eaſt Indies, the girls have children at nine years of age.

Many other inſtances of extraordinary growth might be brought, but the particulars are not remarkably different from thoſe already related.—It is at firſt ſight aſtoniſhing that children of ſuch early and prodigious growth do not become giants: but when we conſider, that the ſigns of puberty appear ſo much ſooner than they ought, it ſeems evident that the whole is only a more than uſually rapid expanſion of the parts, as in hot climates; and accordingly it is obſerved, that ſuch children, inſtead of becoming giants, always decay and die apparently of old age, long before the natural term of human life.

GRUB, in zoology, the Engliſh name of the hexapode worms, produced from the eggs of beetles, and which at length are transformed into winged inſects of the ſame ſpecies with their parents.

GRUBBING, in agriculture, the digging or pulling up of the ſtubs and roots of trees.

When the roots are large, this is a very troubleſome and laborious taſk; but Mr Mortimer hath ſhown how it may be accompliſhed in ſuch a manner as to ſave great expence by a very ſimple and eaſy method. He propoſes a ſtrong iron hook to be made about two feet four inches long, with a large iron-ring faſtened to the upper part of it. This hook muſt be put into a hole in the ſide of the root, to which it muſt be faſtened; and a lever being put into the ring, three men, by means of this lever, may wring out the root, and twiſt the ſap-roots aſunder. Stubs of trees may alſo be taken up with the ſame hook, in which work it will ſave a great deal of labour, though not ſo much as in the other; becauſe the ſtubs muſt be firſt cleft with wedges, before the hook can enter the ſides of them, to wrench them out by pieces.

GRUBENHAGEN, a town and caſtle of the duchy of Brunſwic, in Lower Saxony, remarkable for its mines of ſilver, copper, iron, and lead. E. Long. 9. 36. N. Lat. 51. 45.

GRUINALES (from *grus*, "a crane"), the name of the fourteenth order in Linnæus's Fragments of a Natural Method, conſiſting of geranium, and a few other genera which the author conſiders as allied to it in their habit and external ſtructure.

GRUME, in medicine, denotes a concreted clot of blood, milk, or other ſubſtance. Hence grumous blood is that which approaches to the nature of grume, and by its viſcidity and ſtagnating in the capillary veſſels produces ſeveral diſorders.

GRUPPO, or *Turned SHAKE*, a muſical grace, defined by Playford to conſiſt in the alternate prolation of two tones in juxta-poſition to each other, with a cloſe on the note immediately beneath the lower of them. See SHAKE.

GRUS, in antiquity, a dance performed yearly by the young Athenians around the temple of Apollo, on the day of the Delia. The motions and figures of this dance were very intricate, and variouſly interwoven; ſome of them being intended to expreſs the windings of the labyrinth wherein the minotaur was killed by Theſeus.

GRUS, in aſtronomy, a ſouthern conſtellation, not viſible in our latitude. The number of ſtars in this conſtellation, according to Mr Sharp's Catalogue, is 13.

GRUS, in ornithology. See ARDEA.

GRUTER (James), a learned philologer, and one of the moſt laborious writers of his time, was born at Antwerp in 1560. He was but a child when his father and mother, being perſecuted for the Proteſtant religion by the ducheſs of Parma, governeſs of the Netherlands, carried him into England. He imbibed the elements of learning from his mother, who was one of the moſt learned women of the age, and beſides French, Italian, and Engliſh, was a complete miſtreſs of Latin, and well ſkilled in Greek. He ſpent ſome years in the univerſity of Cambridge; after which he went to that of Leyden to ſtudy the civil law; but at laſt applied himſelf wholly to polite literature. After travelling much, he became profeſſor in the univerſity of Heidelburgh; near which city he died, in 1627. He wrote many works; the moſt conſiderable of which are, 1. A large collection of ancient inſcriptions. 2. *Theſaurus criticus.* 3. *Deliciæ poetarum Gallorum, Italorum, & Belgarum, &c.*

GRUYERS, a town of Swiſſerland, in the canton of Friburgh, with a pretty good caſtle. It is famous for its cheeſe, which is all its riches. E. Long. 7. 23. N. Lat. 46. 35.

GRY, a meaſure containing one tenth of a line.

A line is one-tenth of a digit, and a digit one-tenth of a foot, and a philoſophical foot one-third of a pendulum, whoſe diadromes, or vibrations, in the latitude of 45 degrees, are each equal to one-ſecond of time, or one-ſixtieth of a minute.

GRYLLUS, in zoology, the name of the cricket and locuſt kinds, which, together with the graſshoppers, make only one genus of inſects, belonging to the order of hemiptera. The general characters of the genus are theſe: The head is inflected, armed with jaws, and furniſhed with palpi: The antennæ in ſome of the ſpecies are ſetaceous, in others filiform: The wings are deflected towards and wrapped round the ſides of the body; the under ones are folded up, ſo as to be concealed under the elytra. All the feet are armed with two nails; and the hind ones are formed for leaping. The genus is ſubdivided into five different ſections, or families, as follows:

I. The ACRIDÆ, *Truxalides* of Fabricius, or CRICKET family properly ſo called; of which the characters are: Their head is of a conical form, and longer than the thorax; and their antennæ are enſiform, or ſword-ſhaped. Of this family there are eight ſpecies, none of them found in Britain.

II. The BULLÆ, or *Acrydia* of Fabricius: Theſe are diſtinguiſhed by a kind of creſt or elevation on the thorax: their antennæ are ſhorter than the thorax, and filiform; and their palpi are equal.—The gryllus bulla-bipunctatus is of a dark-brown colour; ſometimes beſprinkled with ſpots of a higher hue. But the chief and moſt obvious diſtinction of this ſpecies is the form of its thorax, which is prolonged, covering the whole body, and decreaſes to the extremity of the abdomen. This prolongation of the thorax ſtands inſtead of elytra, of which this inſect is deſtitute. It has only wings under this projection of the thorax. Linnæus mentions a ſpot in the thorax; which, however, is often wanting. This ſpecies is every where to be met with, in the fields, in woods, &c. There are 10 or 11 other ſpecies, inhabitants of Europe and America.

III. The third family, called ACHETÆ, are diſtinguiſhed by two briſtles, ſituated above the extremity of their abdomen; by having three ſtemmata; and by the tarſi being compoſed of three articulations. This family is in many places called *Cricket*, on account of the ſound which the inſect makes. There are 28 ſpecies enumerated in the new edition of the *Syſtema naturæ*; of which the moſt remarkable are,

1. The gryllus *domeſticus*, or the *domeſticus* and *campeſtris*, the domeſtic and the field gryllus being one and the ſame ſpecies; only that the former is paler and has more of the yellow caſt, and the latter more of a brown. The antennæ are as ſlender as a thread, and nearly equal to the body in length. The head is large, and round, with two large eyes, and three ſmaller ones of a light yellow colour, placed higher on the edge of the depreſſion, from the centre of which originate the antennæ: The thorax is broad and ſhort. In the *males*, the elytra are longer than the body, veined, as it were rumpled on the upper part, croſſed one over the other, and enfolding part of the abdomen, with a projecting angle on the ſides: They have alſo at their baſe a pale coloured band. In the *females*, the elytra leave one-third of the abdomen uncovered, and ſcarcely croſs each other; and they are all over of one colour, veined and not rumpled; nor do they wrap round ſo much of the abdomen underneath. The female, moreover, carries at the extremity of its body a hard ſpine, almoſt as long as the abdomen, thicker at the end, compoſed of two ſheaths, which encompaſs two laminæ: This implement ſerves the inſect to ſink and depoſit its eggs in the ground. Both the male and female have two pointed ſoft appendices at the extremity of the abdomen. Their hinder feet are much larger and longer than the reſt, and ſerve them for leaping.

Towards ſunſet is the time the *field gryllus*, or *cricket* as it is often called, likes beſt to appear out of its ſubterraneous habitation. In White's *Natural Hiſtory of Selbourne* †, a very pleaſing account is given of the manners and economy of theſe inſects; which, however, are ſo ſhy and cautious, he obſerves, that it is no eaſy matter to get a ſight of them; for, feeling a perſon's footſteps as he advances, they ſtop ſhort in the midſt of their ſong, and retire backwards nimbly into their burrows, where they lurk till all ſuſpicion of danger is over. At firſt it was attempted to dig them out with a ſpade, but without any great ſucceſs; for either the bottom of the hole was inacceſſible from its terminating under a great ſtone; or elſe, in breaking up the ground, the poor inſect was inadvertently ſqueezed to death. Out of one ſo bruiſed a multitude of eggs were taken, which were long and narrow, of a yellow colour, and covered with a very tough ſkin. More gentle means were then uſed, and proved ſucceſsful: "a pliant ſtalk of graſs, gently inſinuated into the caverns, will probe their windings to the bottom, and quickly bring out the inhabitant; and thus the humane inquirer may gratify his curioſity without injuring the object of it. It is remarkable, that though theſe inſects are furniſhed with long legs behind, and brawny thighs for leaping, like graſshoppers; yet when driven from their holes they ſhow no activity, but crawl along in a ſhiftleſs manner, ſo as eaſily to be taken: and again, tho' provided with a curious apparatus of wings, yet they never exert them when there ſeems to be the greateſt occaſion. The males only make that ſhrilling noiſe perhaps out of rivalry and emulation, as is the caſe with many animals which exert ſome ſprightly note during their breeding time: it is raiſed by a briſk friction of one wing againſt the other. They are ſolitary beings, living ſingly male or female, each as it may happen; but there muſt be a time when the ſexes have ſome intercourſe, and then the wings may be uſeful perhaps during the hours of night. When the males meet they will fight fiercely, as our author found by ſome which he put into the crevices of a dry ſtone wall, where he wanted to have made them ſettle. For tho' they ſeemed diſtreſſed by being taken out of their knowledge, yet the firſt that got poſſeſſion of the chinks would ſeize on any that were obtruded upon them with a vaſt row of ſerrated fangs. With their ſtrong jaws, toothed like the ſhears of a lobſter's claws, they perforate and round their curious regular cells, having no fore-claws to dig, like the mole-cricket. When taken in the hand, they never offer to defend themſelves, tho' armed with ſuch formidable weapons. Of ſuch herbs as grow before the mouths of their burrows they eat indiſcriminately; and on a little platform, which they make juſt by, they drop their dung; and never, in the day time, ſeem to ſtir more than two or three inches from home. Sitting in the entrance of their caverns they chirp all night as well as day from the middle of the month of May to the middle of July: in hot weather, when they are moſt vigorous, they make the hills echo; and in the ſtiller hours of darkneſs, may be heard to a conſiderable diſtance. In the beginning of the ſeaſon their notes are more faint and inward; but become louder as the ſummer advances, and ſo die away again by degrees.—Sounds do not always give us pleaſure according to their ſweetneſs and melody; nor do harſh ſounds always diſpleaſe. We are more apt to be captivated or diſguſted with the aſſociations which they promote, than with the notes themſelves. Thus the ſhrilling of the *field-cricket*, though ſharp and ſtridulous, yet marvellouſly delights ſome hearers, filling their minds with a train of ſummer ideas of every thing that is rural, verdurous, and joyous. About the tenth of March the crickets appear at the mouths of their cells, which they then open and bore, and ſhape very elegantly. All that ever I have ſeen at that ſeaſon were in their pupa ſtate, and had only the rudiments of wings, lying under a ſkin or coat, which muſt be caſt before the inſect can arrive at its perfect ſtate; from whence I ſhould ſuppoſe that the

† *Let.* 46.

old ones of laſt year do not always ſurvive the winter. In Auguſt their holes begin to be obliterated, and the inſects are ſeen no more till ſpring.—Not many ſummers ago I endeavoured to tranſplant a colony to the terrace in my garden, by boring deep holes in the ſloping turf. The new inhabitants ſtaid ſome time, and fed and ſung; but wandered away by degrees, and were heard at a farther diſtance every morning; ſo that it appears, that on this emergency they made uſe of their wings in attempting to return to the ſpot from which they were taken.—One of theſe crickets, when confined in a paper cage and ſet in the ſun, and ſupplied with plants moiſtened with water, will feed and thrive, and become ſo merry and loud as to be irkſome in the ſame room where a perſon is ſitting: if the plants are not wetted, it will die."

The *domeſtic gryllus*, or hearth-cricket, as it is called, does not require to be ſought after abroad for examination, nor is ſhy like the other ſort: it reſides altogether within our dwellings, intruding itſelf upon our notice whether we will or no. It delights in new built houſes; being, like the ſpider, pleaſed with the moiſture of the walls; and beſides, the ſoftneſs of the mortar enables them to burrow and mine between the joints of the bricks or ſtones, and to open communnications from one room to another. They are particularly fond of kitchens and bakers ovens, on account of their perpetual warmth. "Tender inſects that live abroad either enjoy only the ſhort period of one ſummer, or elſe doze away the cold uncomfortable months in profound ſlumbers; but theſe (our author obſerves), reſiding as it were in a torrid zone, are always alert and merry: a good Chriſtmas fire is to them like the heats of the dog-days. Though they are frequently heard by day, yet is their natural time of motion only in the night. As ſoon as it grows duſk, the chirping increaſes, and they come running forth, and are from the ſize of a flea to that of their full ſtature. As one ſhould ſuppoſe, from the burning atmoſphere which they inhabit, they are a thirſty race, and ſhow a great propenſity for liquids, being found frequently drowned in pans of water, milk, broth, or the like. Whatever is moiſt they affect; and therefore often gnaw holes in wet woollen ſtockings and aprons that are hung to the fire. Theſe crickets are not only very thirſty, but very voracious; for they will eat the ſcummings of pots; yeaſt, ſalt, and crumbs of bread; and any kitchen offal or ſweepings. In the ſummer we have obſerved them to fly, when it became duſk, out of the windows, and over the neighbouring roofs. This feat of activity accounts for the ſudden manner in which they often leave their haunts, as it does for the method by which they come to houſes where they were not known before. It is remarkable, that many ſorts of inſects ſeem never to uſe their wings but when they have a mind to ſhift their quarters and ſettle new colonies. When in the air they move '*volatu undoſo*,' in waves or curves, like wood peckers, opening and ſhutting their wings at every ſtroke, and ſo are always riſing or ſinking.—When they increaſe to a great degree, as they did once in the houſe where I am now writing, they become noiſome peſts, flying into the candles, and daſhing into people's faces; but may be blaſted by gun-powder diſcharged into their crevices and crannies. In families, at ſuch times, they are, like Pharaoh's plague of frogs,—'in their bedchambers, and upon their beds, and in their ovens, and in their kneading-troughs.' Their ſhrilling noiſe is occaſioned by a briſk attrition of their wings. Cats catch hearth-crickets, and playing with them as they do with mice, devour them. Crickets may be deſtroyed, like waſps, by phials half filled with beer, or any liquid, and ſet in their haunts; for being always eager to drink, they will crowd in till the bottles are full." A popular prejudice, however, frequently prevents their being driven away and deſtroyed: the common people imagine that their preſence brings a kind of luck to the houſe while they are in it, and think it would be hazardous to deſtroy them.

2. Gryllus *gryllotalpa*, or mole cricket, is of a very unpleaſant form. Its head, in proportion to the ſize of its body, is ſmall and oblong, with four long thick palpi, and two long antennæ as ſlender as threads. Behind the antennæ are ſituated the eyes, and between thoſe two eyes are ſeen three ſtemmata or leſſer eyes, amounting to five in all, ſet in one line tranſverſely. The thorax forms a kind of cuiraſs, oblong, almoſt cylindrical, which appears as it were velvetty. The elytra, which are ſhort, reach but to the middle of the abdomen, are croſſed one over the other, and have large black or brown nervous fibres. The wings terminate in a point, longer not only than the elytra, but even than the abdomen. The latter is ſoft, and ends in two points or appendices of ſome length. But what conſtitutes the chief ſingularity of this inſect are its fore-feet, that are very large and flat, with broad legs, ending outwardly in four large ſerrated claws, and inwardly in two only; between which claws is ſituated, and often concealed, the tarſus. The whole animal is of a brown duſky colour. It haunts moiſt meadows, and frequents the ſides of ponds and banks of ſtreams, performing all its functions in a ſwampy wet ſoil. With a pair of fore-feet curiouſly adapted to the purpoſe, it burrows and works under ground like the mole, raiſing a ridge as it proceeds, but ſeldom throwing up hillocks. As mole-crickets often infeſt gardens by the ſides of canals, they are unwelcome gueſts to the gardener, raiſing up ridges in their ſubterraneous progreſs, and rendering their walks unſightly. If they take to the kitchen quarters, they occaſion great damage among the plants and roots, by deſtroying whole beds of cabbages, young legumes, and flowers. When dug out, they ſeem very ſlow and helpleſs, and make no uſe of their wings by day; but at night they come abroad, and make long excurſions. In fine weather, about the middle of April, and juſt at the cloſe of day, they begin to ſolace themſelves with a low, dull, jarring note, continued for a long time without interruption, and not unlike the chattering of the fern-owl, or goat-ſucker, but more inward. About the beginning of May they lay their eggs, as Mr White informs us, who was once an eye-witneſs: "for a gardener at an houſe where he was on a viſit, happening to be mowing, on the 6th of that month, by the ſide of a canal, his ſcythe ſtruck too deep, pared off a large piece of turf, and laid open to view a curious ſcene of domeſtic economy:

> "— — — — ingentem lato dedit ore feneſtram:
> " Apparet domus intus, et atria longa pateſcunt:
> " Apparent — — — penetralia."

There were many caverns and winding paſſages leading to a kind of chamber, neatly ſmoothed and rounded, and about the ſize of a moderate ſnuff-box. Within this ſecret nurſery were depoſited near 100 eggs of a dirty yellow colour, and enveloped in a tough ſkin, but too lately excluded to contain any rudiments of young, being full of a viſcous ſubſtance. The eggs lay but ſhallow, and within the influence of the ſun, juſt under a little heap of freſh-moved mould, like that which is raiſed by ants.--When mole-crickets fly, they move "*curſu undoſo*" riſing and falling in curves, like the other ſpecies mentioned before. In different parts of this kingdom people call them *fen-crickets*, *churr-worms*, and *eve churrs*, all very appoſite names."

IV. The Tettigoniæ, Grasshoppers, or *Locuſts* armed at the tail: The females of this family are diſtinguiſhed by a tubular dart at the extremity of their abdomen: in both ſexes the antennæ are ſetaceous, and longer than the abdomen; and the tarſi compoſed of four articulations. Of theſe inſects there are 69 ſpecies enumerated in the *Syſtema Naturæ*. They leap by the help of their hinder legs, which are ſtrong and much longer than the fore ones. Their walk is heavy, but they fly tolerably well. Their females depoſit their eggs in the ground, by means of the appendices which they carry in their tail, which conſiſt of two laminæ, and penetrate the ground. They lay a great number of eggs at a time; and thoſe eggs, united in a thin membrane, form a kind of group. The little larvæ that ſpring from them are wholly like the perfect inſects, excepting in ſize, and their having neither wings nor elytra, but only a kind of knobs, four in number, which contain both, but undiſplayed. The unfolding of them only takes place at the time of the metamorphoſis, when the inſect has attained its full growth. In theſe inſects, when examined internally, beſides the gullet, we diſcover a ſmall ſtomach; and behind that a very large one, wrinkled and furrowed within-ſide. Lower down, there is ſtill a third: ſo that it is thought, and with ſome probability, that all the animals of this genus chew the cud, as they ſo much reſemble ruminant animals in their internal conformation.

V. Locustæ (the *Grylli* of Fabricius), or *Locuſts* unarmed at the tail. This family is diſtinguiſhed by having the tail purple, without the ſetæ of the *Achetæ*, or the tube of the *Tettigoniæ*: their antennæ are filiform, and one half ſhorter than the abdomen: they have three ſtemmata, and three joints to the tarſi. To part of this deſcription, however, there is an exception in the gryllus locuſta-groſſus, the antennæ of which are of a cylindrical form. According to Mr Barbutt, "few ſpecies vary ſo much in ſize and colour. Some of theſe inſects are twice as long as others; the antennæ in moſt are filiform, but in this particular ſpecies cylindrical, compoſed of about 24 articulations, and but one fourth of the length of the body. As to colour, the ſmall individuals are nearly quite red ſpotted with black, with the under part of the body only of a greeniſh yellow. The larger ſubjects are all over of a greeniſh hue, the under part being of a deeper yellow; only the inſide of the hinder thighs is red. But what characteriſes this ſpecies is, the form of the thorax, which has, above, a longitudinal elevation, attended by one on each ſide, the middle whereof drawing nigh to the firſt, forms a kind of X. Moreover, between the claws that terminate the feet there are ſmall ſpunges, but larger in this ſpecies than the reſt. This ſpecies is to be met with every where in the country. The larvæ of caterpillars very much reſemble the perfect inſects, and commonly dwell under ground." Of this tribe, 118 other ſpecies are enumerated in the *Syſtema Naturæ*, natives of different parts of the globe; beſides a conſiderable number noted as unaſcertained with regard to their being diſtinct ſpecies or only ſynonymes or varieties of ſome of the others.

All the Grylli, except the firſt family which feed upon other inſects, live upon plants; the *achetæ* chiefly upon the roots, the *tettigoniæ* and *locuſtæ* upon the leaves.

The diſtinction of *Locuſts* into families (IV. V.), as above characteriſed, is extremely proper; and the difference of organiſation upon which it is founded has been obſerved to be adapted to the mode and the places in which the inſects lay their eggs. But by taking the wings into conſideration, there might have been formed three tribes or diviſions, inſtead of two, upon the ſame natural foundation. Thus according to the obſervations of the Abbe Pouet†, thoſe which have their abdomen furniſhed with the tube or dart abovementioned, lay their eggs in a ſtiff ſort of earth which that inſtrument perforates. During the operation, the dart opens; and, being hollow and grooved on each ſide within, the egg ſlides down along the grooves, and is depoſited in the hole. Of thoſe which have the tail ſimple, *i. e.* which have *no dart*, ſome have long wings, and ſome very ſhort. The long-winged ſort lay their eggs on the bare ground, and have no uſe for a perforating inſtrument; but they cover them with a glutinous ſubſtance, which fixes them to the ſoil, and prevents their being injured either by wind or wetneſs. Thoſe, again, which have ſhort wings depoſit their eggs in the ſand: and to make the holes for this purpoſe, they have the power of elongating and retracting their abdominal rings, and can turn their body as on a pivot; in which operation long wings would have been a material impediment.

The annals of moſt of the warm countries are filled with accounts of the devaſtations produced by locuſts, which ſometimes make their appearance in clouds of vaſt extent. They ſeldom viſit Europe in ſuch ſwarms as formerly; yet in the warmer parts of it are ſtill formidable.—Thoſe which have at uncertain intervals viſited Europe in our memory, are ſuppoſed to have come from Africa: they are a large ſpecies about three inches long. The head and horns are of a browniſh colour; it is blue about the mouth, as alſo on the inſide of the larger legs. The ſhield which covers the back is greeniſh: and the upper ſide of the body brown, ſpotted black, and the under ſide purple. The upper wings are brown, with ſmall duſky ſpots and one larger ſpot at the tips. The under wings are more tranſparent, and of a light brown tinctured with green, but there is a dark cloud of ſpots near the tips.—Theſe inſects are bred in the warm parts of Aſia and Africa, from whence they have often taken their flight into Europe, where they committed terrible devaſtations. They multiply faſter than any other animal in the creation, and are truly terrible in the countries where they breed. Some of them were ſeen in different parts of Britain in the year 1748, and great miſchiefs were apprehended: but happily for that country, the coldneſs of the climate, and the humidity of the ſoil, are very unfavourable to their production; ſo that, as they are only animals of a year's continuation, they all periſh without leaving a young generation to ſucceed them.

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† *Journ. de Phyſique* pour 1787. Apr. p. 224.

When the locuſts take the field, it is ſaid they have a leader at their head, whoſe flight they obſerve, and pay a ſtrict regard to all his motions. They appear at a diſtance like a black cloud, which, as it approaches, gathers upon the horizon, and almoſt hides the light of day. It often happens, that the huſbandman ſees this imminent calamity paſs away without doing him any miſchief; and the whole ſwarm proceeeds onward to ſettle upon ſome leſs fortunate country. In thoſe places, however, where they alight, they deſtroy every green thing, ſtripping the trees of their leaves, as well as devouring the corn and graſs. In the tropical climates they are not ſo pernicious as in the more ſouthern parts of Europe. In the firſt, the power of vegetation is ſo ſtrong, than an interval of three or four days repairs the damage; but in Europe this cannot be done till next year. Beſides, in their long flights to this part of the world, they are famiſhed by the length of their journey, and are therefore more voracious whereever they happen to ſettle. But as much damage is occaſioned by what they deſtroy, as by what they devour. Their bite is thought to contaminate the plant, and either to deſtroy or greatly to weaken its vegetation. To uſe the expreſſion of the huſbandmen, they burn wherever they touch, and leave the marks of their devaſtation for three or four years enſuing. When dead, they infect the air in ſuch a manner that the ſtench is inſupportable.—Oroſius tells us, that in the year of the world 3800, Africa was infeſted with a multitude of locuſts. After having eaten up every thing that was green, they flew off and were drowned in the ſea; where they cauſed ſuch a ſtench as could not have been equalled by the putrefying carcaſes of 100,000 men.

In the year 1650, a cloud of locuſts was ſeen to enter Ruſſia in three different places; and from thence they ſpread themſelves over Poland and Lithuania in ſuch aſtoniſhing multitudes, that the air was darkened and the earth covered with their numbers. In ſome places they were ſeen lying dead, heaped upon each other to the depth of four feet; in others, they covered the ſurface like a black cloth; the trees bent with their weight, and the damage which the country ſuſtained exceeded computation.

In Barbary, their numbers are formidable; and Dr Shaw was a witneſs of their devaſtations there in 1724. Their firſt appearance was in the latter end of March when the wind had been ſoutherly for ſome time. In the beginning of April, their numbers were ſo vaſtly increaſed, that, in the heat of the day, they formed themſelves into large ſwarms that appeared like clouds, and darkened the ſun. In the middle of May they began to diſappear, retiring into the plains to depoſit their eggs. In June the young brood began to make their appearance, forming many compact bodies of ſeveral hundred yards ſquare; which afterwards marching forward, climbed the trees, walls, and houſes, eating every thing that was green in their way. The inhabitants, to ſtop their progreſs, laid trenches all over their fields and gardens, which they filled with water. Some placed large quantities of heath, ſtubble, and ſuch like combuſtible matter, in rows, and ſet them on fire on the approach of the locuſts. But all this was to no purpoſe; for the trenches were quickly filled up, and the fires put out by the great numbers of ſwarms that ſucceeded each other. A day or two after one of theſe was in motion, others that were juſt hatched came to glean after them, gnawing off the young branches, and the very bark of the trees. Having lived near a month in this manner, they arrived at their full growth, and threw off their worm-like ſtate, by caſting their ſkins. To prepare themſelves for this change, they fixed their hinder part to ſome buſh or twig, or corner of a ſtone, when immediately, by an undulating motion uſed on this occaſion, their heads would firſt appear, and ſoon after the reſt of their bodies. The whole transformation was performed in ſeven or eight minutes time, after which they remained for a little while in a languiſhing condition; but as ſoon as the ſun and air had hardened their wings, and dried up the moiſture that remained after caſting off their former ſlough, they returned to their former greedineſs, with an addition both of ſtrength and agility. But they did not long continue in this ſtate before they were entirely diſperſed. After laying their eggs, they directed their courſe northward, and probably periſhed in the ſea.—In that country, however, the amazing fertility of the ſoil and warmneſs of the climate generally render the depredations of theſe inſects of little conſequence; beſides that many circumſtances concur to diminiſh their number. Though naturally herbivorous, they often fight with each other, and the victor devours the vanquiſhed. They are the prey, too, of ſerpents, lizards, frogs, and the carnivorous birds. They have been found in the ſtomachs of the eagle and different kinds of fowls. They are alſo uſed as food by the Moors; who go to hunt them, fry them in oil or butter, and ſell them publicly at Tunis and other places.

In 1754, 1755, 1756, and 1757, great devaſtations were committed in Spain by a ſpecies of locuſts, of which we have the following deſcription by Don Guillermo Bowles, publiſhed in *Dillon's Travels* through that country. "The locuſts are continually ſeen in the ſouthern parts of Spain, particularly in the paſtures and remote uncultivated diſtricts of Eſtramadura, but in general are not taken notice of, if not very numerous, as they commonly feed upon wild herbs, without preying upon gardens and cultivated lands, or making their way into houſes. The peaſants look at them with indifference while they are friſking about in the field, neglecting any meaſure to deſtroy them till the danger is immediate and the favourable moment to remedy the evil is elapſed. Their yearly number is not very conſiderable, as the males are far more numerous than the females. If an equal proportion were allowed only for ten years, their numbers would be ſo great as to deſtroy the whole vegetative ſyſtem. Beaſts and birds would ſtarve for want of ſubſiſtence, and even mankind would become a prey to their ravenous appetites. In 1754, their increaſe was ſo great from the multitude of females, that all La Mancha and Portugal were covered with them and totally ravaged. The horrors of famine were ſpread even farther, and aſſailed

the

Gryllus.

the fruitful provinces of Andaluſia, Murcia, and Valencia.

“ The amours of theſe creatures are objects of ſurpriſe and aſtoniſhment, and their union is ſuch that it is difficult to ſeparate them. When this ſeparation is voluntary, after having laſted ſome hours, they are ſo exhauſted, that the male retires immediately to the water for refreſhment, where, loſing the uſe of his limbs, he ſoon periſhes, and becomes an eaſy prey to the fiſh; having given life to his offspring at the expence of his own. The female, diſembarraſſed, tho' not without violent ſtruggles, ſpends the remainder of her days in ſome ſolitary place, buſy in forming a retreat under ground, where ſhe can ſecure her eggs, of which ſhe generally lays about 40, ſcreening them by her ſagacity from the intemperature of the air, as well as the more immendiate danger of the plough or the ſpade, one fatal blow of which would deſtroy all the hopes of a riſing generation.

“ The manner of her building this cell is equally ſurpriſing. In the hinder part of her body, nature has provided her with a round ſmooth inſtrument, eight lines in length, which at its head is as big as a writing quill, diminiſhing to a hard ſharp point, hollow within like the tooth of a viper, but only to be ſeen with a lens. At the root of this vehicle there is a cavity, with a kind of bladder, containing a glutinous matter, of the ſame colour, but without the conſiſtency or tenacity of that of the ſilk-worm, as I found by an experiment, made for the purpoſe, by an infuſion in vinegar, for ſeveral days, without any effect. The orifice of the bladder correſponds exactly with the inſtrument which ſerves to eject the glutinous matter. It is hid under the ſkin of the belly, and its interior ſurface is united to the moveable parts of the belly, and can partake of its motions, forming the moſt admirable contexture for every part of its operations, as ſhe can diſpoſe of this ingredient at pleaſure, and eject the fluid, which has three very eſſential properties: firſt, being indiſſoluble in water, it prevents its young from being drowned; next, it reſiſts the heat of the ſun, otherwiſe the ſtructure would give way and deſtroy its inhabitants; laſtly, it is proof againſt the froſt of winter, ſo as to preſerve a neceſſary warmth within. For greater ſecurity, this retreat is always contrived in a ſolitary place: for tho' a million of locuſts were to light upon a cultivated field, not one would depoſit her eggs there; but wherever they meet a barren and loneſome ſituation, there they are ſure to repair and lay their eggs.

“ Theſe locuſts ſeem to devour, not ſo much from a ravenous appetite, as from a rage of deſtroying every thing that comes in their way. It is not ſurpriſing, that they ſhould be fond of the moſt juicy plants and fruits, ſuch as melons, and all manner of garden fruits and herbs, and feed alſo upon aromatic plants, ſuch as lavender, thyme, roſemary, &c. which are ſo common in Spain, that they ſerve to heat ovens: but it is very ſingular, that they equally eat muſtard ſeed, onions, and garlic; nay even hemlock; and the moſt rank and poiſonous plants, ſuch as the thorn apple and deadly night-ſhade. They will even prey upon crowfoot, whoſe cauſticity burns the very hides of beaſts; and ſuch is their univerſal taſte, that they do not prefer the innocent mallow to the bitter furze, or rue to wormwood, conſuming all alike, without predilection or favour, with this remarkable circumſtance, that during the four years they committed ſuch havoc in Eſtremadura, the love-apple, or *lycoperſicon ſolanum* of Linnæus, was the only plant that eſcaped their rapacious tooth, and claimed a reſpect to its root, leaves, flowers, and fruit. Naturaliſts may ſearch for their motives, which I am at a loſs to diſcover; the more as I ſaw millions of them light on a field near Almaden, and devour the woollen and linen garments of the peaſants, which were lying to dry on the ground. The curate of the village, a man of veracity, at whoſe houſe I was, aſſured me, that a tremendous body of them entered the church, and devoured the ſilk garments that adorned the images of the ſaints, not ſparing even the varniſh on the altars. The better to diſcover the nature of ſuch a phenomenon, I examined the ſtomach of the locuſt, but only found one thin and ſoft membrane, with which, and the liquor it contains, it deſtroys and diſſolves all kind of ſubſtances, equally with the moſt cauſtic and venomous plants; extracting from them a ſufficient and ſalutary nouriſhment.

“ Out of curioſity to know the nature of ſo formidable a creature, I was urged to examine all its parts with the utmoſt exactneſs: its head is of the ſize of a pea, though longer, its forehead pointing downwards like the handſome Andaluſian horſe, its mouth large and open, its eyes black and rolling, added to a timid aſpect not unlike a hare. With ſuch a daſtardly countenance who would imagine this creature to be the ſcourge of mankind! In its two jaws it has four inciſive teeth, whoſe ſharp points traverſe each other like ſciſſars, their mechaniſm being ſuch as to gripe or to cut. Thus armed, what can reſiſt a legion of ſuch enemies? After devouring the vegetable kingdom, were they, in proportion to their ſtrength and numbers, to become carnivorous like waſps, they would be able to deſtry whole flocks of ſheep, even to the dogs and ſhepherds; juſt as we are told of ants in America, that will overcome the fierceſt ſerpents.

“ The locuſt ſpends the months of April, May, and June, in the place of its birth: at the end of June its wings have a fine roſe colour, and its body is ſtrong. Being then in their prime, they aſſemble for the laſt time, and burn with a deſire to propagate their ſpecies: this is obſerved by their motions, which are unequal in the two ſexes. The male is reſtleſs and ſolicitous, the female is coy, and eager after food, flying the approaches of the male, ſo that the morning is ſpent in the courtſhip of the one and the retreat of the other. About ten o'clock, when the warmth of the ſun has cleared their wings from the dampneſs of the night, the females ſeem uneaſy at the forwardneſs of the males, who continuing their purſuit, they riſe together 500 feet high, forming a black cloud that darkens the rays of the ſun. The clear atmoſphere of Spain becomes gloomy, and the fineſt ſummer day of Eſtremadura more diſmal than the winter of Holland. The ruſtling of ſo many millions of wings in the air, ſeems like the trees of a foreſt agitated by the wind. The firſt direction of this formidable column is always againſt the wind, which if not too ſtrong, the column will extend about a couple of leagues. The locuſts then make a halt, when the moſt dreadful havoc begins; their ſenſe of ſmell being ſo delicate, they can find at that diſtance a corn field or a garden, and after demoliſhing it, riſe again in purſuit of another: this may be ſaid to be done in an inſtant. Each ſeems to have, as it were, four arms and two feet: the males climb up the plants, as ſailors do the ſhrouds of a ſhip, and nip off the tendereſt buds, which fall to the females below.

"Many old people aſſured me, when ſo much miſchief was done in 1754, it was the third time in their remembrance, and that they always are found in the paſture grounds of Eſtramadura, from whence they ſpread into the other provinces of Spain. They are certainly indigenous, being of a different ſhape from thoſe of the North or the Levant, as is evident in comparing them with ſuch in the cabinets of natural hiſtory. The locuſt of Spain is the only one that has roſe-coloured wings: beſides, it is impoſſible they can come from any other part. From the north it is clear they do not, by the obſervation of ſo many ages; from the ſouth they cannot, without croſſing the ſea, which is hardly poſſible by the ſhortneſs of their flight: and like birds of paſſage, they would be known. I once ſaw a cloud of them paſs over Malaga, and move towards the ſea, and go over it, for about a quarter of a league, to the great joy of the inhabitants, who concluded they would ſoon be drowned; but, to their diſappointment, they ſuddenly veered about towards the coaſt, and pitched upon an uncultivated ſpace ſurrounded with vineyards, which they ſoon after quitted. When once they appear, let the number demoliſhed be ever ſo great, the proportion remaining is ſtill too conſiderable: therefore, the only way to put an end to ſuch a calamity, is to attack them beforehand, and deſtroy their eggs, by which means they might be totally extirpated." See Plate CCXXI.

GRYNÆUS (Simon), ſon to a peaſant of Suabia, born in 1493, was Greek profeſſor at Heidelberg, in 1523. He took a tour into England, and received great civility from the lord chancellor Sir Thomas More, to whom Eraſmus had recommended him. He was a learned and laborious man, and did great ſervice to the commonwealth of letters. He was the firſt who publiſhed the Almageſt of Ptolemy in Greek. He alſo publiſhed a Greek Euclid, and Plato's works, with ſome commentaries of Proclus.

GRYPHIUS (Sebaſtian), a celebrated printer of Lyons in France, was a German, and born at Suabia near Augſburg in 1494. He reſtored the art of printing at Lyons, which was before exceedingly corrupted; and the great number of books printed by him are valued by the connoiſſeurs. He printed many books in Hebrew, Greek, and Latin, with new and very beautiful types; and his editions are no leſs accurate than beautiful. The reaſon is, that he was a very learned man, and perfectly verſed in the languages of ſuch books as he undertook to print. Thus a certain epigrammatiſt has obſerved, that Robert Stephens was a very good corrector, Colinæus a very good printer, but that Gryphius was both an able printer and corrector. This is the epigram:

"*Inter tot norunt libros qui cudere, tres ſunt*
"*Inſignes: languet cætera turba fama*
"*Caſtigat Stephanus, ſculpit Colinæus, utrumque*
"*Gryphius edocta mente manuque facit.*"

He died 1556, in his 63d year: and his trade was carried on honourably in the ſame city by his ſon, Anthony Gryphius. One of the moſt beautiful books of Sebaſtian Gryphius is a Latin Bible: it was printed 1550, with the largeſt types that had then been ſeen, in 2 vols folio.

GRYPHITES, in natural hiſtory, in Engliſh CROW'S STONE, an oblong foſſile ſhell, very narrow at the head, and becoming gradually wider to the extremity, where it ends in a circular limb; the head or beak of this is very hooked or bent inward.

They are frequently found in gravel or clay-pits in many countries. There are three or four diſtinct ſpecies of them; ſome are extremely rounded and convex on the back, others leſs ſo; and the plates of which they are compoſed, are in ſome ſmaller and thinner, in others thicker and larger, in ſpecimens of the ſame bigneſs.

GUADALAJARA, or GUADALAXARA, a town of Spain, in New-Caſtile, and diſtrict of Alcala, ſeated on the river Herares. W. Long. 2. 45. N. Lat. 40. 36.

GUADALAJARA, a conſiderable town of North America, and capital of a rich and fertile province of the ſame name, with a biſhop's ſee. W. Long. 114. 59. N. Lat. 20. 20.

GUADALAVIAR, a river of Spain, which riſes on the confines of Arragon and New Caſtile, and, running by Turvel in Arragon, croſſes the kingdom of Valencia, paſſes by the town of the ſame name, and ſoon after falls into the Mediterranean ſea, a little below Valencia.

GUADALQUIVER, one of the moſt famous rivers of Spain, riſes in Andaluſia, near the confines of Granada, and running quite through Andaluſia, by the towns of Baiza, Andaxar, Cordova, Seville, and St Lucar, falls at laſt into the Bay of Cadiz.

GUADALOUPE, a handſome town in Spain, in Eſtramadura, with a celebrated convent, whoſe ſtructure is magnificent, and is immenſely rich. It is ſeated on a rivulet of the ſame name. E. Long. 3. 50. N. Lat. 39. 15.

GUADALUPE, one of the Caribbee iſlands, belonging to the French, the middle of which is ſeated in about N. Lat. 16. 30. W. Long. 61. 20.

This iſland, which is of an irregular figure, may be about 80 leagues in circumference. It is divided into two parts by a ſmall arm of the ſea, which is not above two leagues long, and from 15 to 40 fathoms broad. This canal, known by the name of the *Salt River*, is navigable, but will only carry veſſels of 50 tons burden.

That part of the iſland which gives its name to the whole colony is, towards the centre, full of craggy rocks, where the cold is ſo intenſe, that nothing will grow upon them but fern, and ſome uſeleſs ſhrubs covered with moſs. On the top of theſe rocks, a mountain called *la Souphriere*, or the *Brimſtone Mountain*, riſes to an immenſe height. It exhales, through various openings, a thick black ſmoke, intermixed with ſparks that are viſible by night. From all theſe hills flow numberleſs ſprings, which fertilize the plains below, and moderate the burning heat of the climate by a refreſhing ſtream, ſo celebrated, that the galleons which formerly uſed to touch at the Windward Iſlands, had orders to renew their proviſion with this pure and ſalubrious water. Such is that part of the iſland properly called *Guadalupe*. That which is commonly called

Grand Terre, has not been ſo much favoured by nature. It is indeed leſs rugged; but it wants ſprings and rivers. The ſoil is not ſo fertile, or the climate ſo wholeſome or ſo pleaſant.

No European nation had yet taken poſſeſſion of this iſland, when 550 Frenchmen, led on by two gentlemen named *Loline* and *Dupleſſis*, arrived there from Dieppe on the 28th of June 1635. They had been very imprudent in their preparations. Their proviſions were ſo ill choſen, that they were ſpoiled in the paſſage, and they had ſhipped ſo few, that they were exhauſted in two months. They were ſupplied with more from the mother-country. St Chriſtopher's, whether from ſcarcity or deſign, refuſed to ſpare them any; and the firſt attempts in huſbandry they made in the country, could not as yet afford any thing. No reſource was left for the colony but from the ſavages; but the ſuperfluities of a people, who cultivate but little, and therefore had never laid up any ſtores, could not be very conſiderable. The new comers, not content with what the ſavages might freely and voluntarily bring, came to a reſolution to plunder them; and hoſtilities commenced on the 16th of January 1636.

The Caribbs, not thinking themſelves in a condition openly to reſiſt an enemy who had ſo much the advantage from the ſuperiority of their arms, deſtroyed their own proviſions and plantations, and retired to Grand Terre, or to the neighbouring iſlands. From thence the moſt deſperate came over to the iſland from which they had been driven, and concealed themſelves in the thickeſt parts of the foreſts. In the day time, they ſhot with their poiſoned arrows, or knocked down with their clubs, all the Frenchmen who were ſcattered about for hunting or fiſhing. In the night, they burned the houſes and deſtroyed the plantations of their unjuſt ſpoilers.

A dreadful famine was the conſequence of this kind of war. The coloniſts were reduced to graze in the fields, to eat their own excrements, and to dig up dead bodies for their ſubſiſtence. Many who had been ſlaves at Algiers, held in abhorrence the hands that had broken their fetters; and all of them curſed their exiſtence. It was in this manner that they atoned for the crime of their invaſion, till the government of Aubert brought a peace with the ſavages at the end of the year 1640. The remembrance, however, of hardſhips endured in an invaded iſland, proved a powerful incitement to the cultivation of all articles of immediate neceſſity; which afterwards induced an attention to thoſe of luxury conſumed in the mother-country. The few inhabitants who had eſcaped the calamities they had drawn upon themſelves, were ſoon joined by ſome diſcontented coloniſts from St Chriſtopher's, by Europeans fond of novelty, by ſailors tired of navigation, and by ſome ſea-captains, who prudently choſe to commit to the care of a grateful ſoil the treaſures they had ſaved from the dangers of the ſea. But ſtill the proſperity of Guadalupe was ſtopped or impeded by obſtacles ariſing from its ſituation.

The facility with which the pirates from the neighbouring iſlands could carry off their cattle, their ſlaves, their very crops, frequently brought them into a deſperate ſituation. Inteſtine broils, ariſing from jealouſies of authority, often diſturbed the quiet of the planters. The adventurers who went over to the windward iſlands, diſdaining a land that was fitter for agriculture than for naval expeditions, were eaſily drawn to Martinico by the convenient roads it abounds with. The protection of thoſe intrepid pirates brought to that iſland all the traders who flattered themſelves that they might buy up the ſpoils of the enemy at a low price, and all the planters who thought they might ſafely give themſelves up to peaceful labours. This quick population could not fail of introducing the civil and military government of the Caribbee iſlands into Martinico. From that time the French miniſtry attended more ſeriouſly to this than to the other colonies, which were not ſo immediately under their direction; and hearing chiefly of this iſland, they turned all their encouragements that way.

It was in conſequence of this preference, that in 1700 the number of inhabitants in Guadalupe amounted only to 3825 white people, 325 ſavages, free negroes, mulattoes, and 6725 ſlaves, many of whom were Caribbs. Her cultures were reduced to 60 ſmall plantations of ſugar, 66 of indigo, a little cocoa, and a conſiderable quantity of cotton. The cattle amounted to 1620 horſes and mules, and 3699 head of horned cattle. This was the fruit of 60 years labour. But her future progreſs was as rapid as her firſt atttempts had been ſlow.

At the end of the year 1755, the colony was peopled with 9643 whites, 41,140 ſlaves of all ages and of both ſexes. Her ſaleable commodities were the produce of 334 ſugar-plantations, 15 plots of indigo, 46,840 ſtems of cocoa, 11,700 of tobacco, 2,257,725 of coffee, 12,748,447 of cotton. For her proviſions ſhe had 29 ſquares of rice or maize, and 1219 of potatoes or yams, 2,028,520 banana trees, and 32,577,950 trenches of caſſava. The cattle of Guadalupe conſiſted of 4946 horſes, 2924 mules, 125 aſſes, 13,716 head of horned cattle, 11,162 ſheep or goats, 2444 hogs. Such was the ſtate of Guadalupe when it was conquered by the Britiſh in the month of April 1759.

France lamented this loſs; but the colony had reaſon to comfort themſelves for this diſgrace. During a ſiege of three months, they had ſeen their plantations deſtroyed, the buildings that ſerved to carry on their works burnt down, and ſome of their ſlaves carried off. Had the enemy been forced to retreat after all theſe devaſtations, the iſland was ruined. Deprived of all aſſiſtance from the mother-country, which was not able to ſend her any ſuccours; and expecting nothing from the Dutch (who, on account of their neutrality, came into her roads), becauſe ſhe had nothing to offer them in exchange; ſhe could never have ſubſiſted till the enſuing harveſt.

The conquerors delivered them from theſe apprehenſions. The Britiſh, indeed, are no merchants in their colonies. The proprietors of lands, who moſtly reſide in Europe, ſend to their repreſentatives whatever they want, and draw the whole produce of the eſtate by the return of their ſhips. An agent ſettled in ſome ſea-port of Great Britain is intruſted with the furniſhing the plantation and receiving the produce. This was impracticable at Guadalupe; and the conquerors in this reſpect were obliged to adopt the cuſtom of the conquered. The Britiſh, informed of the advantage the French made of their trade with the colonies, haſtened, in imitation of them, to ſend their ſhips to the conquered iſland; and ſo multiplied their expeditions, that they overſtocked the market, and ſunk the price of all European commodities. The coloniſts bought them at a very low price; and, in conſequence of this plenty, obtained long delays for the payment.

To this credit, which was neceſſary, was ſoon added another ariſing from ſpeculation, which enabled the colony to fulfil its engagements. A great number of negroes were carried thither, to haſten the growth and enhance the value of the plantations. It has been ſaid in various memorials, all copied from each other, that the Engliſh had ſtocked Guadalupe with 30,000 during the four years and three months that they remained maſters of the iſland. The regiſters of the cuſtom-houſes, which may be depended on, as there could be no inducement for an impoſition, atteſt that the number was no more than 18,721. This was ſufficient to give the nation well-grounded hopes of reaping great advantages from their new conqueſt. But their hopes were fruſtrated; and the colony, with its dependencies, was reſtored to its former poſſeſſors by the treaty of the peace in July 1763.

By the ſurvey taken in 1767, this iſland, including the ſmaller iſlands, Deſeada, St Bartholomew, Marigalante, and the Saints; dependent upon it, contains 11,863 white people of all ages and of both ſexes, 752 free blacks and mulattoes, 72,761 ſlaves; which makes in all a population of 85,376 ſouls. The cattle conſiſts of 5060 horſes, 4854 mules, 111 aſſes, 17,378 head of horned cattle, 14,895 ſheep or goats, and 2669 hogs. The proviſion is 30,476,218 trenches of caſſava, 2,819,262 banna trees, 2118 ſquares of land planted with yams and potatoes. The plantations contain 72 arnotto trees, 327 of caſſia, 13,292 of cocoa, 5,881,176 of coffee, 12,156,769 of cotton, 21,474 ſqures of land planted with ſugar-canes. The woods occupy 22,097 ſquares of land. There are 20,247 in meadows, and 6405 are uncultivated or forſaken. Only 1582 plantations grow cotton, coffee, and proviſions. Sugar is made but in 401. Theſe ſugar works employ 140 water-mills, 263 turned by oxen, and 11 wind-mills.

The produce of Guadalupe, including what is poured in from the ſmall iſlands under her dominion, ought to be very conſiderable. But in 1768 it yielded to the mother-country no more than 140,418 quintals of fine ſugar, 23,603 quintals of raw ſugar, 34,205 quintals of coffee, 11,955 quintals of cotton, 456 quintals of cocoa, 1884 quintals of ginger, 2529 quintals of logwood, 24 cheſts of ſweetmeats, 165 cheſts of liquors, 34 caſks of rum, and 1202 undreſſed ſkins. All theſe commodities were ſold in the colony only for 310,792l. 18s. 3d. and the merchandiſe it has received from France has coſt but 197,919l. 18s. 6d. ſterling.

GUADIANA, a large river of Spain, having its ſource in New Caſtile, and, paſſing croſs the high mountains, falls down to the lakes called *Ojos of Guadiana;* from whence it runs to Calatrava, Medelin, Merida, and Badajox in Eſtremadura of Spain; and after having run for ſome time in Alentejo in Portugal, it paſſes on to ſeparate the kingdom of Algarve from Andaluſia, and falls into the bay or gulph of Cadiz between Caſtro Marino and Agramonte.

GUADIX, a town of Spain, in the kingdom of Granada, with a biſhop's ſee. It was taken from the Moors in 1253, who afterwards retook it, but the Spaniards again got poſſeſſion of it in 1489. It is ſeated in a fertile country, in W. Long. 2. 12. N. Lat. 37. 5.

GUAJACUM, Lignum Vitæ, or *Pockwood:* A genus of the monogynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 14th order, *Gruinales.* The calyx is quinquefid and unequal; the petals five, and inſerted into the calyx; the capſule is angulated, and trilocular or quinquelocular.

Species. 1. The officinale, or common lignum vitæ uſed in medicine, is a native of the Weſt India Iſlands and the warmer parts of America. There it becomes a large tree, having a hard, brittle, browniſh bark, not very thick. The wood is firm, ſolid, ponderous, very reſinous, of a blackiſh yellow colour in the middle, and of a hot aromatic taſte. The ſmaller branches have an aſh-coloured bark, and are garniſhed with leaves divided by pairs of a bright green colour. The flowers are produced in cluſters at the end of the branches, and are compoſed of oval concave petals of a fine blue colour. 2. The ſanctum, with many pairs of obtuſe lobes, hath many ſmall lobes placed along the mid-rib by pairs of a darker green colour than thoſe of the foregoing ſort. The flowers are produced in looſe bunches towards the end of the branches, and are of a fine blue colour, with petals fringed on the edges. This ſpecies is alſo a native of the Weſt India iſlands, where it is called *baſtard lignum vitæ.* 3. The Afrum, with many bluntpointed leaves, is a native of the Cape of Good Hope. The plants retain their leaves all the year, but have never yet flowered in Britain.

Culture. The firſt ſpecies can only be propagated by ſeeds, which muſt be procured from the countries where it naturally grows. They muſt be ſown freſh in pots, and plunged into a good hot-bed, where they will come up in ſix or eight weeks. While young, they may be kept in a hot-bed of tan-bark under a frame during the ſummer; but in autumn they muſt be removed into the bark-ſtove, where they ſhould conſtantly remain. The ſecond ſort may be propagated the ſame way; but the third is to be propagated by layers, and will live all the winter in a good green-houſe.

Uſes. The wood of the firſt ſpecies is of very conſiderable uſe both in medicine and in the mechanical arts. It is ſo compact and heavy as to ſink in water. The outer part is often of a pale yellowiſh colour; but the heart is blacker, or of a deep brown. Sometimes it is marbled with different colours. It is ſo hard as to break the tools which are employed in felling it; and is therefore ſeldom uſed as firewood, but is of great uſe to the ſugar-planters for making wheels and cogs to the ſugar-mill. It is alſo frequently wrought into bowls, mortars, and other utenſils. It is brought over hither in large pieces of four or five hundred weight each; and from its hardneſs and beauty is in great demand for various articles of turnery ware.

The wood, gum, bark, fruit, and even the flowers of this tree, have been found to poſſeſs medicinal virtues; but it is only the three firſt, and more particularly the wood and reſin, which are now in general uſe in Europe. The wood has little or no ſmell, except when heated, or while raſping, and then a ſlight aromatic one is perceived. When chewed, it impreſſes a mild acrimony, biting the palate and fauces. Its pungency reſides in its reſinous matter, which it gives out in ſome degree to water by boiling, but ſpirit extracts it wholly.

Of the *bark* there are two kinds; one ſmooth, the other unequal on the ſurface: they are both of them weaker than the wood; though, while in a recent ſtate, they are ſtrongly cathartic.

The gum, or rather gummy reſin, is obtained by wounding the bark in different parts of the body of the tree, or by what has been called *jagging*. It exſudes copiouſly from the wounds, though gradually; and when a quantity is found accumulated upon the ſeveral wounded trees, hardened by expoſure to the ſun, it is gathered and packed in ſmall kegs for exportation. This reſin is of a friable texture, of a deep greeniſh colour, and ſometimes of a reddiſh hue; it has a pungent acrid taſte but little or no ſmell, unleſs heated. The tree alſo yields a ſpontaneous exſudation from the bark, which is called the *native gum*, and is brought to us in ſmall irregular pieces, of a bright ſemipellucid appearance, and differs from the former in being much purer.

In the choice of the wood, that which is the freſheſt, moſt ponderous, and of the darkeſt colour, is the beſt; the largeſt pieces are to be preferred too; and the beſt method is to raſp them as wanted, for the finer parts are apt to exhale when the raſpings or chips are kept a while.

In chooſing the reſin, prefer thoſe pieces which have ſlips of the bark adhering to them, and that eaſily ſeparate therefrom by a quick blow. The reſin is ſometimes ſophiſticated by the negroes with the gum of the manchineal tree; but this is eaſily detected by diſſolving a little in ſpirit of wine or rum. The true gum imparts a whitiſh or milky tinge, but the manchineal gives a greeniſh caſt. Mönch adviſes a few drops of *ſpirit. nitri dulc.* to be added to the ſpirituous ſolution, and then to be diluted with water, by which the gum is to be precipitated in a blue powder; but the adulteration will appear floating in white ſtriæ, &c.

Guaiacum was firſt introduced into Europe as a remedy for the venereal diſeaſe; and appears to have been uſed in Spain ſo early as 1508. The great ſucceſs attending its adminiſtration before the proper uſe of mercury was known, brought it into ſuch repute, that it is ſaid to have been ſold for ſeven old crowns a-pound. It did not, however, continue to maintain its reputation; but was found ſo generally to fail where the diſeaſe was deep-rooted, and was at length ſuperſeded by mercury, to which it now only ſerves occaſionally as an adjuvant in the *decoctum lignorum*, of which guaiacum is the chief ingredient.

The general virtues of guaiacum are thoſe of a warm ſtimulating medicine; ſtrengthening the ſtomach and other viſcera, and remarkably promoting the urinary and cuticular diſcharges: hence, in cutaneous defedations, and other diſorders proceeding from obſtructions of the excretory glands, and where ſluggiſh ſerous humours abound, they are eminently uſeful; rheumatic and other pains have often been relieved by them. They are alſo laxative. The reſin is the moſt active of theſe drugs, and the efficacy of the others depends upon the quantity of this part contained in them. The reſin is extracted from the wood in part by watery liquors, but much more perfectly by ſpirituous ones. The watery extract of this wood, kept in the ſhops, proves not only leſs in quantity, but conſiderably weaker than one made with ſpirit. This laſt extract is of the ſame quality with the native reſin, and differs from that brought to us only in being purer. The gum or extracts are given from a few grains to a ſcruple or half a dram, which laſt doſe proves for the moſt part conſiderably purgative. The officinal preparations of guaiacum are, an extract of the wood, a ſolution of the gum in rectified ſpirit of wine and a ſolution in volatile ſpirit, and an empyreumatic oil diſtilled from the wood. The reſin diſſolved in rum, or combined with water, by means of mucilage or the yolks of eggs, or in form of the volatile tincture or elixir, is much employed in gout and chronic rheumatiſm. The tincture or elixir has been given to the extent of half an ounce twice a-day, and is ſometimes uſefully combined with laudanum.

GUALEOR, Gualior, or *Gowalier*, a large town of Indoſtan in Aſia, and capital of a province of the ſame name, with an ancient and celebrated fortreſs of great ſtrength. It is ſituated in the very heart of Hindoſtan Proper, being about 80 miles to the ſouth of Agra, the ancient capital of the empire, and 130 from the neareſt part of the Ganges. From Calcutta it is, by the neareſt rout, upwards of 800 miles, and 910 by the ordinary one; and about 280 from the Britiſh frontiers. Its latitude is 26. 14. and longitude 78. 26. from Greenwich.

In the ancient diviſion of the empire it is claſſed in the Soubah of Agra, and is often mentioned in hiſtory. In the year 1008, and during the two following centuries, it was thrice reduced by famine. It is probable that it muſt in all ages have been deemed a military poſt of the utmoſt conſequence, both from its ſituation in reſpect to the capital, and from the peculiarity of its ſite, which was generally deemed impregnable. With reſpect to its relative poſition, it muſt be conſidered that it ſtands on the principal road leading from Agra to Malwa, Guzerat, and the Decan; and that too near the place where it enters the hilly tract which advances from Bundelcund, Malwa, and Agimere, to a parallel with the river Jumnah, throughout the greateſt part of its courſe. And from all theſe circumſtances of general and particular ſituation, together with its natural and acquired advantages as a fortreſs, the poſſeſſion of it was deemed as neceſſary to the ruling emperors of Hindoſtan as Dover-caſtle might have been to the Saxon and Norman kings of England. Its palace was uſed as a ſtate priſon as early as 1317, and continued to be ſuch until the downfal of the empire.—On the final diſmemberment of the empire, Gualeor appears to have fallen to the lot of a rajah of the Jat tribe; who aſſumed the government of the diſtrict in which it is immediately ſituated, under the title of Rana of Gohud or Gohd. Since that period it has changed maſters more than once; the Mahrattas, whoſe dominions extend to the neighbourhood of it having ſometimes poſſeſſed it, and at other times the Rana: but the means of transfer were always either famine or treachery, nothing like a ſiege having ever been attempted.

Gualeor was in the poſſeſſion of Madajee Scindia, a Mahratta chief, in 1779, at the cloſe of which year the council-general of Bengal concluded an alliance with the Rana; in conſequence of which, four battalions of ſepoys of 500 men each, and ſome pieces of artillery, were ſent to his aſſiſtance, his diſtrict being over-run by the Mahrattas, and himſelf almoſt ſhut up in his fort of Gohud. The grand object of his alliance was to penetrate into Scindia's country, and finally to draw Scindia himſelf from the weſtern ſide of India, where he was attending the motions of general Goddard, who was then employed in the reduction of Guzerat; it being Mr Haſtings's idea, that when Scindia found his own dominions in danger, he would detach himſelf from the confederacy, of which he was the principal member, and thus leave matters open for an acccommodation with the court of Poonah. It fell out exactly as Mr. Haſtings predicted. Major William Popham was appointed to the command of the little army ſent to the Rana's aſſiſtance; and was very ſucceſsful as well in clearing his country of the enemy, as in driving them out of one of their own moſt valuable diſtricts, and keeping poſſeſſion of it: and Mr Haſtings, who juſtly concluded that the capture of Gualeor, if practicable, would not only open the way into Scindia's country, but would alſo add to the reputation of our arms in a degree much beyond the riſk and expence of the undertaking, repeatedly expreſſed his opinion to major Popham, together with a wiſh that it might be attempted; and founding his hopes of ſucceſs on the confidence that the garriſon would probably have in the natural ſtrength of the place. It was accordingly undertaken; and the following account of the place, and the manner of getting poſſeſſion of it, was written by captain Jonathan Scott, at that time Perſian interpreter to major Popham, to his brother major John Scott.

"The fortreſs of Gualeor ſtands on a vaſt rock of about four miles in length, but narrow, and of unequal breadth, and nearly flat at the top. The ſides are ſo ſteep as to appear almoſt perpendicular in every part; for where it was not naturally ſo, it has been ſcraped away; and the height from the plain below is from 200 to 300 feet. The rampart conforms to the edge of the precipice all around; and the only entrance to it is by ſteps running up the ſide of the rock, defended on the ſide next the country by a wall and baſtions, and farther guarded by ſeven ſtone gateways, at certain diſtances from each other. The area within is full of noble buildings, reſervoirs of water, wells, and cultivated land; ſo that it is really a little diſtrict in itſelf. At the north-weſt foot of the mountain is the town, pretty large, and well built; the houſes all of ſtone. To have beſieged this place would be vain, for nothing but a ſurpriſe or blockade could have carried it.

"A tribe of banditti from the diſtrict of the Rana had been accuſtomed to rob about this town, and once in the dead of night had climbed up the rock and got into the fort. This intelligence they had communicated to the Rana, who often thought of availing himſelf of it, but was fearful of undertaking an enterprize of ſuch moment with his own troops. At length he informed major Popham of it, who ſent a party of the robbers to conduct ſome of his own ſpies to the ſpot. They accordingly climbed up in the night, and found that the guards generally went to ſleep after their rounds. Popham now ordered ladders to be made; but with ſo much ſecrecy, that until the night of ſurpriſe only myſelf and a few others knew it. On the 3d of Auguſt, in the evening, a party was ordered to be in readineſs to march under the command of captain William Bruce; and Popham put himſelf at the head of two battalions, which were immediately to follow the ſtorming party. To prevent as much as poſſible any noiſe in approaching or aſcending the rock, a kind of ſhoes of woollen cloth were made for the ſepoys, and ſtuffed with cotton. At eleven o'clock the whole detachment marched from the camp at Reypour, eight miles from Gualeor, through unfrequented paths, and reached it a little before day-break. Juſt as captain Bruce arrived at the foot of the rock, he ſaw the lights which accompanied the rounds moving along the rampart, and heard the ſentinels cough (the mode of ſignifying that all is well in the Indian camp or garriſon), which might have damped the ſpirit of many men, but ſerved only to inſpire him with more confidence, as the moment for action, that is, the interval between the paſſing the rounds, was now aſcertained. Accordingly when the lights were gone, the wooden ladders were placed againſt the rock, one of the robbers firſt mounted, and returned with an account that the guard was retired to ſleep. Lieutenant Cameron, our engineer, next mounted, and tied a rope-ladder to the battlements of the wall; this kind of ladder being the only one adapted to the purpoſe of ſcaling the wall in a body (the wooden ones only ſerving to aſcend from crag to crag of the rock, and to aſſiſt in fixing the rope-ladders). When all was ready, captain Bruce, with 20 ſepoys, grenadiers, aſcended without being diſcovered, and ſquatted down under the parapet; but before a reinforcement arrived, three of the party had ſo little recollection as to fire on ſome of the garriſon who happened to be lying aſleep near them. This had nearly ruined the whole plan; the garriſon were of courſe alarmed, and ran in great numbers towards the place; but ignorant of the ſtrength of the aſſailants (as the men fired on had been killed outright), they ſuffered themſelves to be ſtopped by the warm fire kept up by the ſmall party of the grenadiers, until major Popham himſelf, with a conſiderable reinforcement, came to their aid. The garriſon then retreated to the inner buildings, and diſcharged a few rockets, but ſoon afterwards retreated precipitately through the gate; whilſt the principal officers, thus deſerted, aſſembled together in one houſe, and hung out a flag. Major Popham ſent an officer to give them aſſurance of quarter and protection; and thus, in the ſpace of two hours, this important and aſtoniſhing fortreſs was completely in our poſſeſſion. We had only 20 men wounded and 1 killed. On the ſide of the enemy, Bapogee the governor was killed, and moſt of the principal officers wounded."

Thus fell the ſtrongeſt fortreſs in Hindoſtan, garriſoned by a choſen body of 1200 men, on Auguſt 4. 1780;

1780; and which, before the capture of it by the Britiſh, was pronounced by the princes of Hindoſtan, as far as their knowledge in the military art extended, to be impregnable. In 1783 Madajee Scindia beſieged this fortreſs, then poſſeſſed by the Rana of Gohud, with an army of 70,000 men, and effected the reduction by the treachery of one of the Rana's officers, who formed the plan of admiſſion of a party of Scindia's troops; theſe were immediately ſupported by another party; who attacked an oppoſite quarter, and got admiſſion alſo.

GUAM, the largeſt of the Ladrone iſlands in the South Sea, being about 40 leagues in circumference. It is the only one among the innumerable iſlands that lie ſcattered in the immenſe South Sea which has a town built in the European ſtyle, with a regular fort, a church, and civilized inhabitants. The air is excellent, the water good, the garden ſtuffs and fruits are exquiſite, the flocks of buffaloes innumerable, as are thoſe of goats and hogs, and all kinds of poultry abound in an aſtoniſhing degree. There is no port in which worn-out ſailors can be more ſpeedily reſtored, or find better or more plentiful refreſhments, than in this.

But Guam did not formerly enjoy this ſtate of abundance. When it was firſt diſcovered by Magellan in 1521, with the other eight principal iſlands that lie north of it, which, with a multitude of ſmaller ones, form together that archipelago known by the name of the Ladrones, they were all crowded with inhabitants, but afforded no refreſhments to navigators except fiſh, bananas, cocoa-nuts, and bread fruit; and even theſe could not be procured but by force, amidſt ſhowers of the arrows and lances of the natives. The Spaniards carried thither from America the firſt ſtock of cattle, of fowls, of plants, and ſeeds, and fruits, as well as garden ſtuffs, which are all now found in ſuch abundance.

The Ladrone iſlands, and Guam in particular, were covered with inhabitants when they were diſcovered. It is ſaid that Guam alone contained upon its coaſts more than 20,000 people. Theſe men were ferocious ſavages and bold thieves, as all the iſlanders in the ſouth ſeas are, undoubtedly becauſe they were unacquainted with the rights of property; but they were ſo ſavage, ſo incapable of ſupporting the yoke of civilization, that the Spaniards, who undertook to bring them under the regulations of law and order, have ſeen their numbers almoſt annihilated within the ſpace of two centuries. Under the government of their miſſionaries, theſe fierce iſlanders, after having long defended, by cruel wars, the right of living like wild beaſts under the guidance of inſtinct, being at laſt obliged to yield to the ſuperiority of the Spaniſh arms, gave themſelves up to deſpair: they took the reſolution of adminiſtering potions to their women, in order to procure abortions, and to render them ſterile, that they might not bring into the word, and leave behind them, beings that were not free, according to the ideas that they had of liberty. A reſolution ſo violent, and ſo contrary to the views and intentions of nature, was perſiſted in with ſo much obſtinacy in the nine Ladrone iſlands, that their population, which at the time of the diſcovery conſiſted of more than 60,000 ſouls, does not now exceed 800 or 900 in the whole extent of the archipelago. About 20 or 30 years ago, the ſcattered fragments of the original natives were collected and eſtabliſhed in the iſland of Guam, where they now begin to recover by the wiſe precautions, and prudent, though tardy, exertions of a government more adapted to the climate of theſe iſlands and to the genius of their inhabitants.

The principal ſettlement, which the Spaniards call the town of Agana, is ſituated about four leagues north-eaſt of the landing place, on the ſea-ſhore, and at the foot of ſome hills not very high, in a beautiful well-watered country. Beſides this, there are 21 ſmaller ſettlements of Indians round the iſland, all on the ſea-ſhore, compoſed of five or ſix families, who cultivate fruits and grain, and employ themſelves in fiſhing.

The centre of the iſland is ſtill uncleared. The trees are not very tall, but they are fit for the building of houſes and of boats. The foreſts are in general very thick. The Spaniards at firſt cleared certain portions of land to turn them into ſavannahs for the feeding of cattle. The formation of ſavannahs conſiſts in multiplying within the foreſts ſmall cleared ſpots ſeparated only by thickets and rows of trees, and kept clean from ſhrubs of every kind. The Spaniards ſow theſe ſpots with graſs ſeeds, and other indigenous plants that are fit for paſturage. Theſe meadows, being effectually ſhaded on every quarter, preſerve their freſhneſs, and afford the flocks and herds a ſhelter from the ſun and the great heat of noon. The cattle that were formerly brought to the ſavannahs of Guam from America have multiplied aſtoniſhingly: they are become wild, and muſt be ſhot when wanted, or taken by ſtratagem.

The woods are likewiſe full of goats, of hogs, and fowls, which were all originally brought thither by the Spaniards, and are now wild. The fleſh of all theſe animals is excellent. In the ſavannahs, and even in the heart of the foreſts, there is a vaſt multitude of pigeons, of parroquets, of thruſhes, and of blackbirds.

Among the indigenous trees of the country, the moſt remarkable are, the cocoa-nut tree and the bread-fruit tree. The woods are alſo filled with guavas, bananas, or plantanes of many varieties, citrons, lemons, and oranges, both ſweet and bitter; and the ſmall dwarf thorny china-orange with red fruit. The caper-buſh abounds in all the Ladrone iſlands; and as it is conſtantly in flower, as well as the citron and orange-ſhrubs, with many other of the indigenous plants, they perfume the air with the moſt agreeable ſmells, and delight the eye with the richeſt colours.

The rivers of Guam, which are either rivulets or torrents, abound in fiſh of an excellent quality: the Indians, however, eat none of them, but prefer the inhabitants of the ſea. The turtle, which grow here as large as thoſe in the iſland of Aſcenſion, are not eaten either by the Indians or Spaniards.

The cultivated crops lately introduced are, the rice, the maize, the indigo, the cotton, the cocoa, the ſugar-cane, which have all ſucceeded. That of the maize, eſpecially, is of aſtoniſhing fertility: it is common to find in the fields where this grain is cultivated plants of twelve feet high, bearing eight or ten ſpikes from nine to ten inches in length, ſet round with well-filled ſeeds. The gardens are ſtored with mangoes and pine-apples. The former is one of the fineſt fruits imaginable: it was brought from Manilla, and may be eaten in great quantity without any bad conſequences.—Horſes have been brought to Guam from Manilla, and aſſes and mules from Acapulco. The Indians have been taught to tame and domeſticate the ox, and to employ him in the draught.

This iſland, the land of which riſes gradually from the ſea-ſhore towards the centre by a gentle acclivity, is not very mountainous. The inhabitants ſay, that its ſoil is equally rich and fertile over the whole iſland, except in the northern part, which forms a peninſula almoſt deſtitute of water. But in the reſt, you cannot go a league without meeting a rivulet. Upon penetrating a little way into the interior part of the country, to the eaſt and the ſouth of Agana, many ſprings of fine water are found, forming at little diſtances, baſons of pure water, which, being ſhaded by thick trees, preſerve a moſt agreeable coolneſs in ſpite of the heat of the climate.

The indigenous inhabitants are ſuch as they were deſcribed by Magellan; of ſmall ſtature, ſufficiently ugly, black, and in general dirty, though they are continually in the water. The women are for the moſt part handſome, well made, and of a reddiſh colour. Both ſexes have long hair. This ſcanty people have become by civilization gentle, honeſt, and hoſpitable. They have, however, at the ſame time acquired a vice that was unknown to their ſavage anceſtors. The men are a little addicted to drunkenneſs, for they drink freely of the wine of the cocoa-nut. They love muſic and dancing much, but labour little. They are paſſionately fond of cock-fighting. On Sundays and holidays they gather together in crowds after the ſervice, at the door of the church; where each Indian brings his cock to match him with that of his neighbour, and each bets upon his own.—The miſſion of Guam is now in the hands of the Auguſtine friars, who have ſupplanted the Jeſuits. E. Long. 139. 25. N. Lat. 30. 26.

GUAMANGA, a conſiderable town of South America, and capital of a province of the ſame name in Peru, and in the audience of Lima, with a biſhop's ſee. It is remarkable for its ſweetmeats, manufactures, and mines of gold, ſilver, loadſtone, and quickſilver. W. Long. 74. 50. S. Lat. 13. 0.

GUANUCO, a rich and handſome town of South America, and capital of a diſtrict of the ſame name in the audience of Lima. W. Long. 72. 55. S. Lat. 9. 55.

GUANZAVELCA, a town of South America, in Peru, and in the audience of Lima. It abounds in mines of quickſilver. W. Long. 71. 59. S. Lat. 12. 40.

GUARANTEE, or WARRANTEE, in law, a term relative to a warrant or warranter, properly ſignifying him whom the warranter undertakes to indemnify or ſecure from damage.

GUARANTEE is more frequently uſed for a warranter, or a perſon who undertakes and obliges himſelf to ſee a ſecond perſon perform what he has ſtipulated to the third. See WARRANTY.

GUARANTY, in matters of polity, the engagement of mediatorial or neutral ſtates, whereby they plight their faith that certain treaties ſhall be inviolably obſerved, or that they will make war againſt the aggreſſor.

GUARD, in a general ſenſe, ſignifies the defence or preſervation of any thing; the act of obſerving what paſſes, in order to prevent ſurpriſe; or the care, precaution, and attention, we make uſe of to prevent any thing from happening contrary to our intentions or inclinations.

GUARD, in the military art, is a duty performed by a body of men, to ſecure an army or place from being ſurpriſed by an enemy. In garriſon the guards are relieved every day: hence it comes that every ſoldier mounts guard once every three or four days in time of peace, and much oftener in time of war. See HONOURS.

Advanced GUARD, is a party of either horſe or foot, that marches before a more conſiderable body, to give notice of any approaching danger. Theſe guards are either made ſtronger or weaker, according to ſituation, the danger to be apprehended from the enemy, or the nature of the country.

Van GUARD. See *Advanced* GUARD.

Artillery GUARD, is a detachment from the army to ſecure the artillery when in the field. Their *corps de garde* is in the front of the artillery park, and their centries diſperſed round the ſame. This is generally a 48-hours guard; and upon a march, this guard marches in the front and rear of the artillery, and muſt be ſure to leave nothing behind: if a gun or waggon breaks down, the officer that commands the guard is to leave a ſufficient number of men to aſſiſt the gunners and matroſſes in getting it up again.

Artillery Quarter-GUARD, is frequently a non-commiſſioned officer's guard from the royal regiment of artillery, whoſe *corps de garde* is always in the front of their encampment.

Artillery Rear-GUARD, conſiſts in a corporal and ſix men, poſted in the rear of the park.

Corps de GARDE, are ſoldiers entruſted with the guard of a poſt, under the command of one or more officers. This word alſo ſignifies the place where the guard mounts.

Grand GUARD; three or four ſquadrons of horſe, commanded by a field-officer, poſted at about a mile or a mile and a half from the camp, on the right and left wings, towards the enemy, for the better ſecurity of the camp.

Forage GUARD, a detachment ſent out to ſecure the foragers, and who are poſted at all places, where either the enemy's party may come to diſturb the foragers, or where they may be ſpread too near the enemy, ſo as to be in danger of being taken. This guard conſiſts both of horſe and foot, and muſt remain on their poſts till the foragers are all come off the ground.

Main GUARD, is that from which all other guards are detached. Thoſe who are for mounting guard aſſemble at their reſpective captain's quarters, and march from thence to the parade, in good order; where, after the whole guard is drawn up, the ſmall guards are detached to their reſpective poſts: then the ſubalterns throw lots for their guards, who are all under the command of the captain of the main guard. This guard mounts in garriſon at different hours, according as the governor pleaſes.

*Piquet-*GUARD, a good number of horſe and foot, always in readineſs in caſe of an alarm: the horſes are generally ſaddled all the time, and the riders booted.

The foot draw up at the head of the battalion, frequently at the beating of the tat-too; but afterwards return to their tents, where they hold themſelves in readineſs to march upon any ſudden alarm. This guard is to make reſiſtance in caſe of an attack, until the army can get ready.

*Baggage-*GUARD, is always an officer's guard, who has the care of the baggage on a march. The waggons ſhould be numbered by companies, and follow one another regularly: vigilance and attention in the paſſage of hollow ways, woods, and thickets, muſt be ſtrictly obſerved by this guard.

Quarter GUARD, is a ſmall guard commanded by a ſubaltern officer, poſted in the front of each battalion, at 222 feet before the front of the regiment.

Rear GUARD, that part of the army which brings up the rear on a march, generally compoſed of all the old grand guards of the camp. The rear-guard of a party is frequently eight or ten horſe, about 500 paces behind the party. Hence the advance guard going out upon a party, form the rear-guard in their retreat.

Rear GUARD, is alſo a corporal's guard placed in the rear of a regiment, to keep good order in that part of the camp.

Standard GUARD, a ſmall guard under a corporal, out of each regiment of horſe, who mount on foot in the front of each regiment, at the diſtance of 20 feet from the ſtreets, oppoſite the main-ſtreet.

Trench GUARD, only mounts in the time of a ſiege, and ſometimes conſiſts of three, four, or ſix battalions, according to the importance of the ſiege. This guard muſt oppoſe the beſieged when they ſally out, protect the workmen, &c.

Provoſt GUARD, is always an officer's guard that attends the provoſt in his rounds, either to prevent deſertion, marauding, rioting, &c. See PROVOST.

GUARD, in fencing, implies a poſture proper to defend the body from the ſword of the antagoniſt.

Ordinary GUARDS, ſuch as are fixed during the campaign, and relieved daily.

Extraordinary GUARDS, or detachments, which are only commanded on particular occaſions; either for the further ſecurity of the camp, to cover the foragers, or for convoys, eſcorts, or expeditions.

GUARDS, alſo imply the troops kept to guard the king's perſon, and conſiſt both of horſe and foot.

Horſe GUARDS, in England, are gentlemen choſen for their bravery, to be entruſted with the guard of the king's perſon; and were divided into four troops, called *the 1ſt, 2d, 3d, and 4th troop of horſe-guards*. The firſt troop was raiſed in the year 1660, and the command given to lord Gerard; the ſecond in 1661, and the command given to Sir Philip Howard; the third in 1693, and the command given to earl Feverſham; the fourth in 1692, and the command given to earl Newburgh. Each troop had one colonel, two lieutenant-colonels, one cornet and major, one guidon and major, four exempts and captains, four brigadiers and lieutenants, one adjutant, four ſub-brigadiers and cornets, and 60 private men. But the four troops are now turned into two regiments of life-guards.

Horſe-Grenadier GUARDS, are divided into two troops, called *the 1ſt and 2d troops of horſe-grenadier guards*. The firſt troop was raiſed in 1693, and the command given to lieutenant-general Cholmondeley; the ſecond in 1702, and the command given to lord Forbes. Each troop has one colonel, one lieutenant-colonel, one guidon or major, three exempts and captains, three lieulieutenants, one adjutant, three cornets, and 60 private men.

Yeomen of the GUARD, firſt raiſed by Henry VII. in the year 1485. They are a kind of pompous foot-guards to the king's perſon; and are generally called by a nickname the *Beef-Eaters*. They were anciently 250 men of the firſt rank under gentry; and of larger ſtature than ordinary, each being required to be ſix feet high. At preſent there are but 100 in conſtant duty, and 70 more not on duty; and when any one of the 100 dies, his place is ſupplied out of the 70. They go dreſſed after the manner of king Henry VIII's time. Their firſt commander or captain was the earl of Oxford, and their pay is 2s. 6d. per day.

*Foot-*GUARDS are regiments of foot appointed for the guards of his majeſty and his palace. There are three regiments of them, called *the 1ſt, 2d, and 3d regiments of foot-guards*. They were raiſed in the year 1660; and the command of the firſt given to colonel Ruſſel, that of the ſecond to general Monk, and the third to the earl Linlithgow. The firſt regiment is at preſent commanded by one colonel, one lieutenant-colonel, three majors, 23 captains, one captain-lieutenant, 31 lieutenants, and 24 enſigns; and contains three battalions. The ſecond regiment has one colonel, one lieutenant-colonel, two majors, 14 captains, one captain-lieutenant, 18 lieutenants, 16 enſigns; and contains only two battalions. The third regiment is the ſame as the ſecond.

The French GUARDS are divided into thoſe within, and thoſe without, the palace.—The firſt are the *gardes du corps*, or body-guards; which conſiſt of four companies, the firſt of which companies was anciently Scots. The *Scots* GUARDS, *infra*.

The guards without are the *Gens d'Armes*, light-horſe, muſqueteers, and two other regiments, the one of which is French and the other Swiſs.

New arrangements, however, have taken place in this department as well as others ſince the late revolution.

Scots GUARDS, a celebrated band, which formed the firſt company of the ancient *gardes du corps* of France.

It happened from the ancient intercourſe between France and Scotland, that the natives of the latter kingdom had often diſtinguiſhed themſelves in the ſervice of the former. On this foundation the company of Scots guardes, and the company of Scots gendarmes, were inſtituted.—Both of them owed their inſtitution to Charles VII. of France, by whom the firſt ſtanding army in Europe was formed, *anno* 1454; and their fates cannot but be intereſting to Scotſmen. See GENDARMES.

Valour, honour, and fidelity, muſt have been very conſpicuous features of the national character of the

Scots, when ſo great and civilized a people as the French could be induced to chooſe a body of them, foreigners as they were, for guarding the perſons of their ſovereigns.—Of the particular occaſion and reaſons of this predilection, we have a recital by Louis XII. a ſucceeding monarch. After ſetting forth the ſervice which the Scots had performed for Charles VII. in expelling the Engliſh out of France, and reducing the kingdom to his obedience, he adds—“ Since which reduction and for the ſervice of the Scots upon that occaſion, and for the great loyalty and virtue which he found in them, he ſelected 200 of them for the guard of his perſon, of whom he made an hundred men at arms, and an hundred life-guards: And the hundred men at arms are the hundred lances of our ancient ordinances; and the life-guard men are thoſe of our guard, who ſtill are near and about our perſon.”—As to their fidelity in this honourable ſtation, the hiſtorian, ſpeaking of Scotland, ſays, “ The French have ſo ancient a friendſhip and alliance with the Scots, that of 400 men appointed for the king's life-guard, there are an hundred of the ſaid nation who are the neareſt to his perſon, and in the night keep the keys of the apartment where he ſleeps. There are, moreover, an hundred complete lances and two hundred yeomen of the ſaid nation, beſides ſeveral that are diſperſed thro' the companies: and for ſo long a time as they have ſerved in France, never hath there been one of them found that hath committed or done any fault againſt the kings or their ſtate; and they make uſe of them as of their own ſubjects.”

Hiſt. of Louis XII. by Claud Seyſil, maſter of requeſts to that prince.

The ancient rights and privilges of the Scottiſh life-guards were very honourable; eſpecially of the twenty-four firſt. The author of the Ancient Alliance ſays, “ On high holidays, at the ceremony of the royal touch, the erection of knights of the king's order, the reception of extraordinary ambaſſadors, and the public entries of cities, there muſt be ſix of their number next to the king's perſon, three on each ſide: and the body of the king muſt be carried by theſe only, whereſoever ceremony requires. They have the keeping of the keys of the king's lodging at night, the keeping of the choir of the chapel, the keeping the boats where the king paſſes the rivers; and they have the honour of bearing the white ſilk fringe in their arms, which in France is the coronne coleur. The keys of all the cities where the king makes his entry are given to their captain in waiting or out of waiting. He has the privilege, in waiting or out of waiting, at ceremonies, ſuch as coronations, marriages, and funerals of the kings, and at the baptiſm and marriage of their children, to take duty upon him. The coronation-robe belongs to him: and this company, by the death or change of a captain, never changes its rank, as do the three others.”

This company's firſt commander, who is recorded as a perſon of great valour and military accompliſhments, was Robert Patillock, a native of Dundee; and the band, ever ardent to diſtinguiſh itſelf, continued in great reputation till the year 1578. From that period, the Scots guards were leſs attended to, and their privileges came to be invaded. In the year 1612, they remonſtrated to Louis XIII. on the ſubject of the injuſtice they had ſuffered, and ſet before him the ſervices they had rendered to the crown of France. Attempts were made to re-eſtabliſh them on their ancient foundation; but no negociation for this purpoſe was effectual. The troops of France grew jealous of the honours paid them: the death of Francis II. and the return of Mary to Scotland, at a time when they had much to hope, were unfortunate circumſtances to them: the change of religion in Scotland, was an additional blow: and the acceſſion of James VI. to the throne of England, diſunited altogether the intereſts of France and Scotland. The Scots guards of France had therefore, latterly, no connection with Scotland but the name.

Guard-Boat, a boat appointed to row the rounds amongſt the ſhips of war which are laid up in any harbour, &c. to obſerve that their officers keep a good looking out, calling to the guard boat as ſhe paſſes, and not ſuffering her crew to come on board, without having previouſly communicated the watch-word of the night.

Guard-Ship, a veſſel of war appointed to ſuperintend the marine affairs in a harbour or river, and to ſee that the ſhips which are not commiſſioned have their proper watchward kept duly, by ſending her guard-boats around them every night. She is alſo to receive ſeamen who are impreſſed in the time of war.

GUARDIAN, in law, a perſon who has the charge of any thing; but more commonly it ſignifies one who has the cuſtody and education of ſuch perſons as have not ſufficient diſcretion to take care of themſelves and their own affairs, as children and ideots.

Their buſineſs is to take the profits of the minor's lands to his uſe, and to account for the ſame: they ought to ſell all moveables within a reaſonable time, and to convert them into land or money, except the minor is near of age, and may want ſuch things himſelf; and they are to pay intereſt for the money in their hands, that might have been ſo placed out; in which caſe it will be preſumed that the guardians made uſe of it themſelves. They are to ſuſtain the lands of the heir, without making deſtruction of any thing thereon, and to keep it ſafely for him: if they commit waſte on the lands, it is a forfeiture of the guardianſhip, 3 Edw. I. And where perſons, as guardians, hold over any land, without the conſent of the perſon who is next intitled, they ſhall be adjudged treſpaſſers, and ſhall be accountable; 6 Ann. cap. xviii.

Guardian, or *Warden, of the Cinque-ports*, is an officer who has the juriſdiction of the cinque-ports, with all the power that the admiral of England has in other places.

Camden relates, that the Romans, after they had ſettled themſelves and their empire in Britain, appointed a magiſtrate, or governor, over the eaſt parts, where the cinque-ports lie, with the title of *comes litoris Saxonici per Britanniam*; having another, who bore the like title, on the oppoſite ſide of the ſea. Their buſineſs was to ſtrengthen the ſea-coaſt with munition, againſt the outrages and robberies of the barbarians; and that antiquary takes the warden of the Cinque-ports to have been erected in imitation thereof. The wardenſhip is a place of value, ſuppoſed worth 7000l. *per annum*.

Guardian of the Spiritualities, the perſon to whom the ſpiritual juriſdiction of any dioceſe is committed, during the time the ſee is vacant. A guardian of the ſpiritualities may likewiſe be either ſuch in law, as the archbiſhop is of any dioceſe within his province; or by delegation, as he whom the archbiſhop or vicar-general for the time appoints. Any ſuch guardian has power to hold courts, grant licences, diſpenſations, probates of wills, &c.

GUAREA, in botany: A genus of the monogynia order, belonging to the octandria claſs of plants. The calyx is quadrifid; the petals four; the nectarium cylindric, having the antheræ in its mouth; the capſule is quadrilocular and quadrivalvular; the ſeeds ſolitary.

GUARINI (Battiſta), a celebrated Italian poet, born at Ferrara, in 1538. He was great-grandſon to Guarino of Verona, and was ſecretary to Alphonſo Duke of Ferrara, who intruſted him with ſeveral important commiſſions. After the death of that prince, he was ſucceſſively ſecretary to Vincenzio de Gonzaga, to Ferdinand de Medicis grand duke of Tuſcany, and to Francis Maria de Feltri duke of Urbino. But the only advantages he reaped under theſe various maſters, were great encomiums on his wit and compoſitions. He was well acquainted with polite literature; and acquired immortal reputation by his Italian poems, eſpecially by his *Paſtor Fido*, the moſt known and admired of all his works, and of which there have been innumerable editions and tranſlations. He died in 1612.

GUARDIA, or GUARDA, a town of Portugal, in the province of Beira, with a biſhop's ſee. It contains about 2300 inhabitants, is fortified both by art and nature, and has a ſtately cathedral. W. Long. 5. 17. N. Lat. 40. 20.

GUARDIA-Alferez, a town of Italy, in the kingdom of Naples, and in the Contado-di-Moliſe, with a biſhop's ſee. E. Long. 15. 53. N. Lat. 51. 50.

GUARGALA, or GUERGUELA, a town of Africa, and capital of a ſmall kingdom of the ſame name, in Biledulgerid, to the ſouth of Mount Atlas. E. Long. 9. 55. N. Lat. 28. 0.

GUARIBA, in natural hiſtory, the name of a ſpecies of monkey found in the Weſt Indies. See SIMIA.

GUASTALLA, a ſtrong town of Italy, in the duchy of Mantua, with the title of a duchy, remarkable for a battle between the French and Imperialiſts in 1734. It was ceded to the duke of Parma in 1748, by the treaty of Aix-la-Chapelle. It is ſeated near the river Po, in E. Long. 10. 33. N. Lat. 44. 45.

GUATIMALA, *the* AUDIENCE *of*, in North America, and in New Spain, is above 750 miles in length, and 450 in breadth. It abounds in chocolate, which they make uſe of inſtead of money. It has 12 provinces under it: and the native Americans, under the dominions of Spain, profeſs Chriſtianity; but it is mixed with a great many of their own ſuperſtitions. There is a great chain of high mountains, which run acroſs it from E. to W. and it is ſubject to earthquakes and ſtorms. It is however very fertile; and produces, beſides chocolate, great quantities of cochineal and cotton.

GUATIMALA, a province of North America, in New Spain, and in the Audience of the ſame name; bounded on the W. by Soconjuſco, on the N. by Verapaz and Honduras, on the E. by Nicaragua, and on the S. by the ſouth ſea. St Jago de Guatimala is the capital of the whole audience.

GUATIMALA, a large and rich town of North America, in New Spain; and capital of a government of the ſame name, with a biſhop's ſee, and an univerſity. It carries on a great trade, eſpecially in chocolate. W. Long. 91. 30. N. Lat. 14. 0.

GAUTIMALA (the Volcano of), is a mountain, which throws out fire and ſmoke. St Jago de Gautimala was almoſt ruined by it in 1541. It was afterwards rebuilt at a good diſtance from this dreadful mountain. A few years ago, however, it was again deſtroyed, with circumſtances more terrible perhaps than any mentioned in hiſtory.

GUAVA, in botany. See PSIDIUM.

GUAXACA, a province of North America, in New Spain, which is very fertile in wheat, Indian corn, cochineal, and caſſia. It is bounded by the gulph of Mexico on the north, and by the ſouth ſea on the ſouth. It contains mines of gold, ſilver, and cryſtal. Guaxaca is the capital town.

GUAXACA, a town of North America, in the Audence of Mexico, and capital of the province of the ſame name, with a biſhop's ſee. It is without walls, and does not contain above 2000 inhabitants; but it is rich, and they make very fine ſweet meats and chocolate. It has ſeveral rich convents, both for men and women. W. Long. 100. N. Lat. 17. 45.

GUAYRA, a diſtrict of the province of La Plata, in South America, having Braſil on the eaſt, and Paraguay on the weſt.

GUBEN, a handſome town of Germany, in Lower Luſatia, ſeated on the river Neiſſe, and belonging to the houſe of Sax-Merſenburg. E. 14. 59. N. Lat. 51. 55.

GUBER, a kingdom of Africa, in Negroland. It is ſurrounded with high mountains; and the villages, which are many, are inhabited by people who are employed in taking care of their cattle and ſheep. There are alſo abundance of artificers, and linen-weavers, who ſend their commodities to Tombuto. The whole country is overflowed every year by the inundations of the Niger, and at that time the inhabitants ſow their rice. There is one town which contains almoſt 6000 families, among whom are many merchants.

GUBIO, a town of Italy, in the territory of the church, and in the duchy of Urbino, with a biſhop's ſee. E. Long. 12. 41. N. Lat. 43. 18.

GUDGEON, in ichthyology; a ſpecies of cyprinus. See CYPRINUS.

This fiſh, though ſmall, is of ſo pleaſant a taſte, that it is very little inferior to ſmelt. They ſpawn twice in the ſummer-ſeaſon; and their feeding is much like the barbels in ſtreams and on gravel, ſlighting all manner of flies: but they are eaſily taken with a ſmall red worm, fiſhing near the ground; and being a leather-mouthed fiſh, will not eaſily get off the hook when ſtruck.—The gudgeon may be fiſhed for with float, the hook being on the ground; or by hand, with a running line on the ground, without cork or float. But although the ſmall red worm abovementioned is the beſt bait for this fiſh, yet waſps, gentles, and cad-baits will do very well. You may alſo fiſh for gudgeons with two or three hooks at once, and find very pleaſant ſport, where they riſe any thing large. When you angle for them, ſtir up the ſand or gravel with a long pole; this will make them gather to that place, bite faſter, and with more eagerneſs.

Sea-GUDGEON, Rock-fiſh, or *Black-Goby*. See GOBIUS.

GUEBRES, or Gabres. See Gabres.

GUELPHS, or Guelfs, a celebrated faction in Italy, antagoniſts of the Gibelins. See Gibelins.

The Guelphs and Gibelins filled Italy with blood and carnage for many years. The Guelphs ſtood for the Pope, againſt the emperor. Their riſe is referred by ſome to the time of Conrad III. in the twelfth century; by others, to that of Frederic I.; and by others, to that of his ſucceſſor Frederic II. in the thirteenth century.

The name of *Guelph* is commonly ſaid to have been formed from *Welfe*, or *Welfo*, on the following occaſion: the emperor Conrad III. having taken the duchy of Bavaria from Welfe VI. brother of Henry duke of Bavaria, Welfe, aſſiſted by the forces of Roger king of Sicily, made war on Conrad, and thus gave birth to the faction of the Guelfs.

Others derive the name *Guelfs* from the German *Wolff*, on account of the grievous evils committed by that cruel faction: others deduce the denomination from that of a German called *Guelfe*, who lived at Piſtoye; adding, that his brother, named *Gibel*, gave his name to the Gibelins. See the article Gibelins.

GUELDERLAND, one of the united provinces, bounded on the W. by Utrecht and Holland, on the E. by the biſhopric of Munſter and the duchy of Cleves, on the N. by the Zuyder ſea and Overyſſel, and on the S. it is ſeparated from Brabant by the Maes. Its greateſt extent from N. to S. is about 47 miles, and from W. to E. near as much; but its figure is very irregular. The air here is much healthier and clearer than in the maritime provinces, the land lying higher. Excepting ſome part of what is called the *Veluwe*, the ſoil is fruitful. It is watered by the Rhine, and its three branches, the Wahal, the Yſſel, and the Leck, beſides leſſer ſtreams. In 1079, it was raiſed to a county by the emperor Henry IV. and in 1339 to a duchy by the emperor Louis of Bavaria. It had dukes of its own till 1528, when it was yielded up to the emperor Charles V. In 1579, it acceded to the union of Utrecht. It is divided into three diſtricts, each of which has its ſtates and diets. Thoſe for the whole province are held twice a-year at the capital towns. The province ſends 19 deputies to the ſtates-general. Here are computed 285 Calviniſt miniſters, 14 Roman Catholic congregations, 4 of the Lutheran perſuaſion, beſides 3 others of Remonſtrants and Anabaptiſts. The places of moſt note are Nimeguen, Zutphen, Arnheim, Harderwyk, Loo, &c.

GUELDRES, a ſtrong town of the Netherlands, in the duchy of the ſame name. It was ceded to the king of Pruſſia by the peace of Utrecht, and is ſeated among marſhes. E. Long. 6. 21. N. Lat. 51. 30.

GUERCINO. See Barbieri.

GUERICKE, or Gueriche, (Otho), the moſt celebrated mathematician of his time, was born in 1602. He was the inventor of the air pump; and author of ſeveral works in natural philoſophy, the chief of which is *Experimenta Magdeburgica*. He died in 1686.

GUERNSEY, an iſland in the Engliſh channel, on the coaſt of Normandy, ſubject to Britain; but (as well as the adjacent iſlands) governed by its own laws. See Jersey. It extends from eaſt to weſt in the form of a harp, and is thirteen miles and a half from the ſouth-weſt to north-eaſt, and twelve and a half, where broadeſt, from eaſt to weſt. The air is very healthy, and the ſoil naturally more rich and fertile than that of Jerſey; but the inhabitants neglect the cultivation of the land for the ſake of commerce: they are, however, ſufficiently ſupplied with corn and cattle, both for their own uſe and that of their ſhips. The iſland is well fortified by nature with a ridge of rocks, one of which abounds with emery, uſed by lapidaries in the poliſhing of ſtones, and by various other artificers. Here is a better harbour than any in Jerſey, which occaſions its being more reſorted to by merchants; and on the ſouth ſide the ſhore bends in the form of a creſcent, encloſing a bay capable of receiving very large ſhips. The iſland is full of gardens and orchards; whence cyder is ſo plentiful, that the common people uſe it inſtead of ſmall-beer, but the more wealthy drink French wine.

GUETTARDA, in botany: A genus of the heptandria order, belonging to the monœcia claſs of plants; and in the natural method ranking under the 38th order, *Tricoccæ*. The male calyx is cylindrical; the corolla cleft into ſeven parts, and funnel-ſhaped. The female calyx cylindrical; the corolla cleft into ſeven parts; one piſtil, and the fruit a dry plum.

GUIANA, a large country of South America, is bounded on the eaſt and north by the Atlantic ocean, and the river Oroonoko; on the ſouth, by the river of the Amazons; and on the weſt, by the provinces of Grenada and New-Andaluſia, in Terra-Firma, from which it is ſeparated both on the weſt and north by the river Oroonoko. It extends above 1200 miles from the north-eaſt to the ſouth-weſt, that is, from the mouth of the river Oroonoko to the mouth of the river of Amazons, and near 600 in the contrary direction.

Moſt geographers divide it into two parts, calling the country along the coaſt *Carribbeano Proper*, and the interior country *Guiana Proper*: the laſt is alſo ſtyled *El Dorado* by the Spaniards, on account of the immenſe quantity of gold it is ſuppoſed to contain.

The Portugueſe, French, and Dutch, have all ſettlements along the coaſt. What lies ſouth of Cape North belongs to the firſt of theſe nations; the coaſt between Cape North and Cape Orange is poſſeſſed by the natives; French Guiana, Old Cayenne, or Equinoctial France, extends from Cape Orange, about 240 miles along the coaſt, to the river Marani; where the Dutch territory begins, and extends to the mouth of the Oroonoko.

Along the coaſt, the land is low, marſhy, and ſubject to inundations in the rainy ſeaſon, from a multitude of rivers which deſcend from the inland mountains. Hence it is, that the atmoſphere is ſuffocating, hot, moiſt, and unhealthful, eſpecially where the woods have not been cleared away. Indeed, the Europeans are forced to live in the moſt diſagreeable ſituations, and fix their colonies at the mouths of the rivers, amidſt ſtinking marſhes, and the putrid ooze of ſalt moraſſes, for the conveniency of exportation and importation.

“ Dutch Guiana (according to an account lately publiſhed by a gentleman who reſided ſeveral years at Surinam as a phyſician) was firſt diſcovered by Columbus in 1498. It lies between the 7° of north and the 5° of ſouth latitude, and between the 53° and 60° of longitude weſt from London. It is bounded on the north and eaſt, by the Atlantic; on the weſt, by the rivers Oroonoko and Negrœ; and on the ſouth, by the river of Amazons.

"It is now divided between the Spaniards, Dutch, French, and Portugueſe; but, except its ſea-coaſt, and lands adjacent to its rivers, it has hitherto remained unknown to all but its original natives; and even of theſe, it is only the Dutch territories that foreigners have any knowledge of; for thoſe of the Spaniards, French, and Portugueſe, are inacceſſible to them.

"This country, on account of the diverſity and fertility of its ſoil, and of its vicinity to the equator, which paſſes through it, affords almoſt all the productions of the different American countries between the tropics, beſides a variety peculiar to itſelf."

Dutch Guiana was formerly the property of the Engliſh, who made ſettlements at Surinam, where a kind of corrupt Engliſh is ſtill ſpoken by the negroes. The Dutch took it in the reign of Charles the Second; and it was ceded to them by a treaty in 1674, in exchange for what they had poſſeſſed in the province now ſtate of *New-York*.

The land for 50 miles up the country from the ſea-coaſt is flat; and during the rainy ſeaſons, covered two feet high with water. This renders it inconceivably fertile; the earth, for 12 inches deep, being a ſtratum of perfect manure: an attempt was once made to carry ſome of it to Barbadoes; but the wood-ants ſo much injured the veſſel, that it never was repeated. The exceſſive richneſs of the ſoil is a diſadvantage, for the canes are too luxuriant to make good ſugar; and therefore, during the firſt and ſecond crop, are converted into rum.

There are ſome trees on this part; but they are ſmall and low, conſiſting chiefly of a ſmall ſpecies of palm, intermixed with a leaf near 30 feet long and three feet wide, which grows in cluſters, called a *Troælie*; and, at the edges of running-water, with mangroves.

Farther inward, the country riſes; and the ſoil, though ſtill fertile, is leſs durable. It is covered with foreſts of valuable timber, that are always green; and there are ſome ſandy hills, though no mountains; in the French territories, however, there are mountains, according to the report of the Indians, for they have never been viſited by any other people.

In this country the heat is ſeldom diſagreeable: the trade-winds by day, the land breezes in the evening, and the invariable length of the nights, with gentle dews, refreſh the air, and render it temperate and ſalubrious. There are two wet ſeaſons and two dry, of three months each, in every year; and, during more than a month in each wet ſeaſon, the rain is inceſſant. The dry ſeaſons commence ſix weeks before the equinoxes, and continue ſix weeks after. The wet ſeaſons are more wholeſome than the dry, becauſe the rains keep the waters that cover the low lands, next the ſea, freſh and in motion; but during the dry ſeaſon it ſtagnates, and, as it waſtes, becomes putrid, ſending up very unwholeſome exhalations. Bloſſoms, green and ripe fruit, are to be found upon the ſame tree in every part of the year. There are ſome fine white and red agates in Guiana, which remain untouched; and mines of gold and ſilver, which the Dutch will not ſuffer to be wrought.

The inhabitants of Guiana are either natives, who are of a reddiſh brown; or negroes and Europeans; or a mixed progeny of theſe in various combinations. The natives are divided into different tribes; more or leſs enlightened and poliſhed, as they are more or leſs remote from the ſettlement of the Europeans. They allow polygamy, and have no diviſion of lands. The men go to war, hunt, and fiſh; and the women look after domeſtic concerns, ſpin, weave in their faſhion, and manage the planting of caſſava and manive, the only things which in this country are cultivated by the natives. Their arms are bows and arrows; ſharp poiſoned arrows, blown through a reed, which they uſe in hunting; and clubs made of a heavy wood called *Iron-wood*. They eat the dead bodies of thoſe that are ſlain in war; and ſell for ſlaves thoſe they take priſoners; their wars being chiefly undertaken to furniſh the European plantations. All the different tribes go naked. On particular occaſions they wear caps of feathers; but, as cold is wholly unknown, they cover no part but that which diſtinguiſhes the ſex. They are cheerful, humane, and friendly; but timid, except when heated by liquor, and drukenneſs is a very common vice among them.

Their houſes conſiſt of four ſtakes ſet up in a quadrangular form, with croſs poles, bound together by ſlit nibbees, and covered with the large leaves called *troælies*. Their life is ambulatory; and their houſe, which is put up and taken down in a few hours, is all they have to carry with them. When they remove from place to place, which, as they inhabit the banks of rivers, they do by water in ſmall canoes, a few veſſels of clay made by the women, a flat ſtone on which they bake their bread, and a rough ſtone on which they grate the roots of the caſſava, a hammock and a hatchet, are all their furniture and utenſils; moſt of them, however, have a bit of a looking-glaſs framed in paper, and a comb.

Their poiſoned arrows are made of ſplinters of a hard heavy wood, called *cacario*; they are about 12 inches long, and ſomewhat thicker than a coarſe knitting needle: one end is formed into a ſharp point; round the other is wound ſome cotton, to make it fit the bore of the reed through which it is to be blown. They will blow theſe arrows 40 yards with abſolute certainty of hitting the mark, and with force enough to draw blood, which is certain and immediate death. Againſt this poiſon no antidote is known. The Indians never uſe theſe poiſoned arrows in war, but in hunting only, and chiefly againſt the monkies; the fleſh of an animal thus killed may be ſafely eaten, and even the poiſon itſelf ſwallowed with impunity.

GUIAQUIL, a town, bay, and harbour of South America, in Peru, and capital of an audience of the ſame name. W. Long. 76. 55. S. Lat. 2. 0.

GUIARA, a ſea-port town of South-America, and on the Caracca coaſt. The Engliſh attempted to take it in 1739 and 1743; but they were repulſed both times. W. Long. 66. 5. N. Lat. 10. 35.

GUICCIARDINI (Franciſco), a celebrated hiſtorian, born at Florence in 1482. He profeſſed the civil law with reputation, and was employed in ſeveral embaſſies. Leo X. gave him the government of Modena and Reggio, and Clement VII. that of Romagna and Bologna. Guicciardini was alſo lieutenant-general of the pope's army, and diſtinguiſhed himſelf by his bravery on ſeveral occaſions; but Paul III. having taken from him the government of Bologna, he retired to Florence, where he was made counſellor of ſtate, and was of great ſervice to the houſe of Medicis. He at length retired into the country to write the hiſtory of Italy, which he compoſed in Italian, and which comprehends what paſſed from the year 1494 to 1532. This hiſtory is greatly eſteemed; and was continued by John Baptiſt Adriani, his friend. He died in 1540.

Guicciardini (Lewis), his nephew, compoſed a hiſtory of the Low Countries, and memoirs of the affairs of Europe, from 1530 to 1560. He wrote with great ſpirit againſt the perſecution of the duke D'Alva, for which he impriſoned him. Died in 1583.

GUIDES, in military language, are uſually the country people in the neighbourhood of an encampment; who give the army intelligence concerning the country, the roads by which they are to march, and the probable route of the enemy.

GUIDI (Alexander), an eminent Italian poet, born at Pavia in 1650. Having a deſire to ſee Rome, he there attracted the notice of queen Chriſtina of Sweden, who retained him at her court; he beſide obtained a conſiderable benefice from pope Innocent XI. and a penſion from the duke of Parma. For a good office he did the ſtate of Milan with prince Eugene, he was enrolled among the nobles and decurions of that town; and died in 1712. Nature had been kinder to his intellects than to his exterior form; his body was ſmall and crooked, his head was large, and he was blind of his right eye. A collection of his works was publiſhed at Verona in 1726.

GUIDO Aretin.—See Aretin.

Guido (Reni), an illuſtrious Italian painter, born at Bologna in 1595. In his early age he was the diſciple of Dennis Calvert, a Flemiſh maſter of good reputation; but afterwards entered himſelf in the ſchool of the Carraci. He firſt imitated Ludovico Carracci; but fixed at laſt in a peculiar ſtyle of his own, that ſecured him the applauſe of his own time and the admiration of poſterity. He was much honoured, and lived in ſplendor: but an unhappy attachment to gaming ruined his circumſtances; the reflection of which brought on a languiſhing diſorder, that put an end to his life in 1642. There are ſeveral deſigns of this great maſter in print, etched by himſelf.

GUIDON, a ſort of flag or ſtandard borne by the king's life-guard; being broad at one extreme, and almoſt pointed at the other, and ſlit or divided into two. The guidon is the enſign or flag of a troop of horſe-guards. See Guard.

Guidon alſo denotes the office who bears the guidons. The guidon is that in the horſe-guards which the enſign is in the foot. The guidon of a troop of horſe takes place next below the cornet.

Guidons, *guidones*, or *ſchola guidonum* was a company of prieſts eſtabliſhed by Charlemagne, at Rome, to conduct and guide pilgrims to Jeruſalem, to viſit the holy places: they were alſo to aſſiſt them in caſe they fell ſick, and to perform the laſt offices to them in caſe they died.

GUIENNE, the largeſt province of France, bounded on the north by Saintogne, Angoumois, and Limoſin; on the eaſt by Limoſin, Auvergne, and Languedoc; on the ſouth by the Pyrenees, Lower Navarre, and Bearn; and on the weſt by the ocean. It is about 225 miles in length, and 200 in breadth. It is divided into the Upper and Lower. The Upper comprehends Querci, Rouergue, Armagnac, the territory of Comminges, and the county of Bigorre. The Lower contains Bourdelois, Perigord, Agenois, Condomois, Bazadois, the Lander, Proper Gaſcony, and the diſtrict of Labour. The principal rivers are, the Garonne, the Adour, the Tarn, the Aveiron, and the Lot. Bourdeaux is the capital town.

GUILANDINA, the Nickar tree: A genus of the monygynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 33d order, *Lomentaceæ*. The calyx is monophyllous and ſalver-ſhaped; the petals, inſerted into the neck of the calyx, nearly equal. The ſeed-veſſel a legumen.

Species. 1. The bonduc, or yellow nickar. 2. The bonducella, or gray nickar. Theſe are climbing plants, natives of the Weſt-Indies, where they riſe to the height of twelve or fourteen feet: the flowers come out at the wings of the ſtalks; and are compoſed of five concave yellow petals. They are ſucceeded by pods about three inches long and two broad, cloſely armed with ſlender ſpines, opening with two valves, each incloſing two hard ſeeds about the ſize of childrens marbles, of a yellowiſh colour. 3. The moringa, or morunga nickar, is a native of the iſland of Ceylon, and ſome places on the Malabar coaſt. It riſes to the height of 25 or 30 feet, having flowers produced in looſe bunches from the ſide of the branches, and compoſed of an unequal number of petals.

Culture and Uſes. Theſe plants being natives of warm climates, require to be kept through the winter in a ſtove in this country. They are propagated by ſeeds; but thoſe of the firſt ſort are ſo hard, that unleſs they are ſoaked two or three days in water before they are put into the ground, or placed under the pots in the tan-bed to ſoften their covers, they will remain for years without vegetating.—The roots of the third ſort are ſcraped when young, and uſed by the inhabitants of Ceylon and Malabar as thoſe of horſe-radiſh are in Europe. The wood dyes a beautiful blue colour. It is the *lignum nephriticum*, or nephritic wood, of the diſpenſatories; and is brought over in large, compact, ponderous pieces, without knots, of a whitiſh or pale yellow colour on the outſide, and dark coloured or reddiſh within; the bark is uſually rejected. This wood imparts to water or rectified ſpirit a deep tincture; appearing, when placed between the eye and the light, of a golden colour; in other ſituations blue: pieces of another wood are ſometimes mixed with it, which give only a yellow colour to water. The nephritic wood has ſcarce any ſmell, and very little taſte. It ſtands recommended in difficulty of urine, nephritic complaints, and all diſorders of the kidneys and urinary paſſages; and is ſaid to have this peculiar advantage, that it does not, like the warmer diuretics, heat or offend the parts. Practitioners, however, have not found theſe virtues warranted by experience.

GUILD, (from the Saxon *guildan*, to "pay"), ſignifies a fraternity or company, becauſe every one was *gildare, i. e.* to pay ſomething towards the charge and ſupport of the company. As to the original of theſe guilds or companies: It was a law among the Saxons, that every freeman of fourteen years of age ſhould find ſureties to keep the peace, or be committed: upon which certain neighbours, conſiſting of ten families, enter into an aſſociation, and become bound for each other, either to produce him who committed an offence, or to make ſatisfaction to the injured party: that they might the better do this, they raſed a ſum of money among themſelves, which they put into a common ſtock; and when one of their pledges had committed an offence, and was fled, then the other nine made ſatisfaction out of this ſtock, by payment of money according to the offence. Becauſe this aſſociation conſiſted of ten families, it was called a *decennary*: and from hence came out later kinds of fraternities. But as to the preciſe time when theſe guilds had their origin in England, there is nothing of certainty to be found; ſince they were in uſe long before any formal licence was granted to them for ſuch meetings. It ſeems to have been about the cloſe of the eleventh century, ſays Anderſon, in his Hiſtory of Commerce, vol. i. p. 70, that merchant-guilds, or fraternities, which were afterwards ſtyled corporations, came firſt into general uſe in many parts of Europe. Mr Madox, in his *Firma Burgi*, chap. i. § 9. thinks, they were hardly known to our Saxon progenitors, and that they might be probably brought into England by the Normans; although they do not ſeem to have been very numerous in thoſe days. The French and Normans might probably borrow them from the free cities of Italy, where trade and manufactures were much earlier propagated, and where poſſibly ſuch communities were firſt in uſe. Theſe guilds are now companies joined together, with laws and orders made by themſelves, by the licence of the prince.

GUILD, in the royal boroughs of Scotland, is ſtill uſed for a company of merchants, who are freemen of the borough. See BOROUGH.

Every royal borough has a dean of *guild*, who is the next magiſtrate below the bailiff. He judges of controverſies among men concerning trade; diſputes between inhabitants touching buildings, lights, water-courſes, and nuiſances; calls courts, at which his brethren of the *guild* are bound to attend; manages the common ſtock of the *guild*; and amerces and collects fines.

GUILD, *Gild*, or *Geld*, is alſo uſed among ancient writers, for a compenſation or mulct, for a fault committed.

GUILD-*Hall*, or *Gild-Hall*, the great court of judicature for the city of London. In it are kept the mayor's court, the ſheriff's court, the court of huſtings, court of conſcience, court of common-council, chamberlain's court, &c. Here alſo the judges ſit upon *niſi prius*, &c.

GUILDFORD, or GULDEFORD, a borough-town of Surry, ſituated on the river Wye, thirty one miles ſouth-weſt of London. Near it are the ruinous walls of an old caſtle, this having been in the Saxon times a royal villa, where many of the kings uſed to paſs the feſtivals. Here is a corporation conſiſting of a mayor, recorder, aldermen, &c. which ſent members to parliament ever ſince parliament had a being. The great road from London to Chicheſter and Portſmouth lies through this town, which has always been famous for good inns, the cleaneſt of linen, and other excellent accomodations; and the aſſizes are often held here. Its manufactory formerly was cloth, of which there are ſtill ſome ſmall remains. Here is a ſchool founded by king Edward VI. alſo an almſhouſe endowed with lands worth 300l. a-year, of which 100l. to be employed in ſetting the poor at work, and the other 200l. for the maintenance of a maſter, 12 brethren, and 8 ſiſters, who are to have 2s. 6d. a-week. There are, beſides, two charity ſchools for 30 boys and 20 girls. There were three churches in this town, but one of them fell down in April 1740. There is a fine circular courſe for horſe-matches, which begin when the Newmarket races are ended. King William III. founded a plate of 100 guineas to be run for here every May, and uſed to honour the race with his preſence, as did once king George I. The river Wey is made navigable to the town, and by it a great quantity of timber is carried to London, not only from this neighbourhood, but from Suſſex and Hampſhire woods, above 30 miles off, from whence it is brought hither in the ſummer by land carriage. This navigation is alſo of great ſupport to Farnham market, corn bought there being brought to the mills on this river within ſeven miles diſtance, and, after being ground and dreſſed, is ſent down in barges to London. The road from hence to Farnham is very remarkable, for it runs along upon the ridge of a high chalky hill, called *St Catharine's*, no wider than the road itſelf, from whence there is an extenſive proſpect, viz. to the N. and N. W. over Bagſhot-Heath, and the other way into Suſſex, and almoſt to the South Down. The town ſends two members to parliament; and gives title of earl to the North family.

GUILLEMOT, in ornithology. See COLYMBUS.

GUILLIM, (John), of Welſh extraction, was born in Herefordſhire, about the year 1565. Having completed his education at Brazen-noſe college, Oxford, he became a member of the college of arms in London; and was made rouge croix purſuivant, in which poſt he died in 1621. He publiſhed, in 1610, a celebrated work, intitled *the Diſplay of Heraldry*, folio, which has gone through many editions. To the fifth, which came out in 1679, was added *A treatiſe of honor civil and military*, by captain John Loggan.

GUINEA, a large tract of country lying on the weſt ſide of the continent of Africa, extends along the coaſt three or four thouſand miles, beginning at the river Senegal, ſituated about the 17th degree of north latitude (being the neareſt part of Guinea as well to Europe as to North-America). From that river to the river Gambia, and in a ſoutherly courſe to Cape Sierra Leona, is comprehended a coaſt of about 700 miles; being the ſame tract for which Queen Elizabeth granted charters to the firſt traders to that coaſt. From Sierra Leona, the land of Guinea takes a turn to the eaſtward, extending that courſe about 1500 miles, including thoſe ſeveral diviſions known by the names of the *Grain Coaſt*, the *Ivory Coaſt*, the *Gold Coaſt*, and the

Slave Coaſt, with the large kingdom of *Benin*. From thence the land runs ſouthward along the coaſt about 1200 miles, which contains the kingdoms of *Congo* and *Angola*; where the trade for ſlaves ends. From which to the ſouthermoſt cape of Africa, called the *Cape of Good Hope*, the country is ſettled by Caffres and Hottentots, who have never been concerned in the making or ſelling ſlaves.

1. Of the parts which are abovementioned, the firſt is that ſituated on the great river Senegal, which is ſaid to be navigable more than 1000 miles, and is by travellers deſcribed to be very agreeable and fruitful. Mr Brue, principal factor for the French African company, who lived 16 years in that country, after deſcribing its fruitfulneſs and plenty near the ſea, adds*, "The farther you go from the ſea, the country on the river ſeems the more fruitful and well improved, abounding with Indian corn, pulſe, fruit, &c. Here are vaſt meadows, which feed large herds of great and ſmall cattle, and poultry numerous: the villages that lie thick on the river, ſhow the country is well peopled." The ſame author, in the account of a voyage he made up the river Gambia, the mouth of which lies about 300 miles ſouth of the Senegal, and is navigable about 600 miles up the country, ſays, "that he was ſurprized to ſee the land ſo well cultivated; ſcarce a ſpot lay unimproved; the low lands divided by ſmall canals were all ſowed with rice, &c. the higher ground planted with millet, Indian corn, and peaſe of different ſorts; their beef excellent; poultry plenty and very cheap, as well as all other neceſſaries of life." Mr Moor, who was ſent from England about the year 1735, in the ſervice of the African company, and reſided at James Fort on the river Gambia, or in other factories on that river, about five years, confirms the above account of the fruitfulneſs of the country. Captain Smith, who was ſent in the year 1726 by the African company to ſurvey their ſettlements throughout the whole coaſt of Guinea, ſays‡, "the country about the Gambia is pleaſant and fruitful; proviſions of all kinds being plenty and exceeding cheap." The country on and between the two abovementioned rivers is large and extenſive, inhabited principally by thoſe three negroe nations known by the name of *Jalofs*, *Fulis* and *Mandingos*. The Jalofs poſſeſs the middle of the country. The Fulis principal ſettlement is on both ſides of the Senegal: great numbers of theſe people are alſo mixed with the Mandingos, which laſt are moſtly ſettled on both ſides the Gambia. The government of the Jalofs is repreſented as under a better regulation than can be expected from the common opinion we entertain of the negroes. We are told in Aſtley's Collection, "That the king has under him ſeveral miniſters of ſtate, who aſſiſt him in the exerciſe of juſtice. The grand Jeraſo is the chief juſtice through all the king's dominions, and goes in circuit from time to time to hear complaints and determine controverſies. The king's treaſurer exerciſes the ſame employment, and has under him alkairs, who are governors of towns or villages. That the kondi, or viceroy, goes the circuit with the chief juſtice, both to hear cauſes and inſpect into the behaviour of the alkadi, or chief magiſtrate of every village in their ſeveral diſtricts." Vaſconcelas, an author mentioned in the Collection, ſays, "the ancienteſt are preferred to be the prince's counſellors, who keep always about his perſon; and the men of moſt judgment and experience are the judges." The Fulis are ſettled on both ſides of the river Senegal: their country which is very fruitful and populous, extends near 400 miles from eaſt to weſt. They are generally of a deep tawney complexion, appearing to bear ſome affinity to the Moors, whoſe country they join on the north: they are good farmers, and make great harveſts of corn, cotton, tobacco, &c. and breed great numbers of cattle of all kinds. But the moſt particular account we have of theſe people is from Moore, who ſays*, "Some of theſe Fuli blacks, who dwell on both ſides the river Gambia, are in ſubjection to the Mandingos, amongſt whom they dwell, having been probably driven out of their country by war or famine. They have chiefs of their own, who rule with much moderation. Few of them will drink brandy, or any thing ſtronger than water and ſugar, being ſtrict Mahometans. Their form of government goes on eaſy, becauſe the people are of a good quiet diſpoſition, and ſo well inſtructed in what is right, that a man who does ill is the abomination of all, and none will ſupport him againſt the chief. In theſe countries the natives are not covetous of land, deſiring no more than what they uſe; and as they do not plough with horſes and cattle, they can uſe but very little; therefore the kings are willing to give the Fulis leave to live in their country and cultivate their lands. If any of their people are known to be made ſlaves, all the Fulis will join to redeem them; they alſo ſupport the old, the blind, and lame, amongſt themſelves; and as far as their abilities go, they ſupply the neceſſities of the Mandingos, great numbers of whom they have maintained in famine." The author, from his own obſervations, ſays, "They were rarely angry, and that he never heard them abuſe one another."

The Mandingos are ſaid by Mr Brue before mentioned, "to be the moſt numerous nation on the Gambia, beſides which, numbers of them are diſperſed over all theſe countries; being the moſt rigid Mahometans amongſt the negroes, they drink neither wine nor brandy, and are politer than the other negroes. The chief of the trade goes through their hands. Many are induſtrious and laborious, keeping their ground well cultivated, and breeding a good ſtock of cattle†. Every town has an alkadi, or governor, who has great power; for moſt of them having two common fields of clear ground, one for corn, and the other for rice, the alkadi appoints the labour of all the people. The men work the corn ground, and the women and girls the rice ground; and as they all equally labour, ſo he equally divides the corn amongſt them; and in caſe any are in want, the others ſupply them. This alkadi decides all quarrels, and has the firſt voice in all conferences in town affairs." Some of theſe Mandingos, who are ſettled at Galem, far up the river Senegal, can read and write Arabic tolerably; and are a good hoſpitable people, who carry on a trade with the inland nations. "They are extremely populous in thoſe parts, their women being fruitful, and they not ſuffering any perſon amongſt them, but ſuch as are guilty of crimes, to be made ſlaves." We are told from Jobſon, "That the Mahometan Negroes ſay their prayers thrice a day. Each village has

* *Aſtley's Collect.* vol. ii. p 46,

‡ *Voyage to Guinea*, p. 31, 34.

* *Travels into diſtant parts of Africa*, p. 198.

† *Aſtley's Collect.* p. 296.

has a prieſt who calls them to their duty. It is ſurprizing (ſays the author), as well as commendable, to ſee the modeſty, attention, and reverence they obſerve during their worſhip. He aſked ſome of their prieſts the purport of their prayers and ceremonies; their anſwer always was, "that they adored God by proſtrating themſelves before him: that by humbling themſelves, they acknowledged their own inſignificancy, and farther intreated him to forgive their faults, and to grant them all good and neceſſary things, as well as deliverance from evil." Jobſon takes notice of ſeveral good qualities in theſe negro prieſts, particularly their great ſobriety. They gain their livelihood by keeping ſchool for the education of the children. The boys are taught to read and write. They not only teach ſchool, but rove about the country, teaching and inſtructing, for which the whole country is open to them; and they have a free courſe through all places, though the kings may be at war with one another.

The three fore-mentioned nations practiſe ſeveral trades, as ſmiths, potters, ſadlers, and weavers. Their ſmiths particularly work neatly in gold and ſilver, and make knives, hatchets, reaping hooks, ſpades, and ſhares to cut iron, &c. Their potters make neat tobacco pipes, and pots to boil their food. Some authors ſay that weaving is their principal trade: this is done by the women and girls, who ſpin and weave very fine cotton cloth, which they dye blue or black. Moore ſays, the Jalofs particularly make great quantities of the cotton cloth; their pieces are generally 27 yards long, and about nine inches broad, their looms being very narrow; theſe they ſew neatly together, ſo as to ſupply the uſe of broad cloth.

It was in theſe parts of Guinea that M. Adanſon, correſpondent of the Royal Academy of Sciences at Paris, was employed from the year 1749 to the year 1753, wholly in making natural and philoſophical obſervations on the country about the rivers Senegal and Gambia. Speaking of the great heats in Senegal, he ſays‡, "it is to them that they are partly indebted for the fertility of their lands; which is ſo great, that, with little labour and care, there is no fruit nor grain but grows in great plenty."

Of the ſoil on the Gambia, he ſays, "it is rich and deep, and amazingly fertile; it produces ſpontaneouſly, and almoſt without cultivation, all the neceſſaries of life, grain, fruit, herbs, and roots. Every thing matures to perfection, and is excellent in its kind." One thing which always ſurprized him, was the prodigious rapidity with which the ſap of trees repairs any loſs they may happen to ſuſtain in that country; "And I was never (ſays he) more aſtoniſhed, than when landing four days after the locuſts had devoured all the fruits and leaves, and even the buds of the trees, to find the trees covered with new leaves, and they did not ſeem to me to have ſuffered much." "It was then (ſays the ſame author) the fiſh ſeaſon; you might ſee them in ſhoals approaching towards land. Some of thoſe ſhoals were 50 fathoms ſquare, and the fiſh crowded together in ſuch a manner, as to roll upon one another, without being able to ſwim. As ſoon as the negroes perceive them coming towards land, they jump into the water with a baſket in one hand, and ſwim with the other. They need only to plunge and to lift up their baſket, and they are ſure to return loaded with fiſh." Speaking of the appearance of the country, and of the diſpoſition of the people, he ſays, "which way ſoever I turned mine eyes on this pleaſant ſpot, I beheld a perfect image of pure nature; an agreeable ſolitude, bounded on every ſide by charming landſcapes; the rural ſituation of cottages in the midſt of trees; the eaſe and indolence of the negroes, reclined under the ſhade of their ſpreading foilage; the ſimplicity of their dreſs and manners; the whole revived in my mind the idea of our firſt parents, and I ſeemed to contemplate the world in its primitive ſtate. They are, generally ſpeaking, very good-natured, ſociable, and obliging. I was not a little pleaſed with this my firſt reception; it convinced me, that there ought to be a conſiderable abatement made in the accounts I had read and heard every where of the ſavage character of the Africans. I obſerved, both in the negroes and Moors great humanity and ſociableneſs, which gave me ſtrong hopes that I ſhould be very ſafe amongſt them, and meet with the ſucceſs I deſired in my inquiries after the curioſities of the country." He was agreeably amuſed with the converſation of the negroes, their fables, dialogues, and witty ſtories with which they entertain each other alternately, according to their cuſtom. Speaking of the remarks which the natives made to him with relation to the ſtars and planets, he ſays, "it is amazing, that ſuch a rude and illiterate people ſhould reaſon ſo pertinently in regard to thoſe heavenly bodies; there is no manner of doubt, but that with proper inſtruments, and a good will, they would become excellent aſtronomers."

2. That part of Guinea known by the name of the *Grain* and *Ivory Coaſt*, extends about 500 miles. The ſoil is ſaid to be in general fertile, producing abundance of rice and roots; indigo and cotton thrive without cultivation, and tobacco would be excellent if carefully manufactured; they have fiſh in plenty; their flocks greatly increaſe; and their trees are loaded with fruit. They make a cotton cloth, which ſells well on the coaſt. In a word, the country is rich, and the commerce advantageous, and might be greatly augmented by ſuch as would cultivate the friendſhip of the natives. Theſe are repreſented by ſome writers as a rude, treacherous people; whilſt ſeveral other authors of credit give them a very different character, deſcribing them as ſenſible, courteous, and the faireſt traders on the coaſt of Guinea. In the Collection, they are ſaid † to be averſe to drinking to exceſs, and ſuch as do are ſeverely puniſhed by the king's order. On inquiry why there is ſuch a diſagreement in the character given of theſe people, it appears, that tho' they are naturally inclined to be kind to ſtrangers, with whom they are fond of trading, yet the frequent injuries done them by Europeans have occaſioned their being ſuſpicious and ſhy: the ſame cauſe has been the occaſion of the ill treatment they have ſometimes given to innocent ſtrangers, who have attempted to trade with them. As the Europeans have no ſettlement on this part of Guinea, the trade is carried on by ſignals from the ſhips, on the appearance of which the natives uſually come on board in their canoes, bringing their gold-duſt, ivory, &c. which has given opportunity to ſome villanous Europeans to carry them off with their effects, or retain them on board till a ran-

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‡ *Voyage to Senegal*, &c. p. 308.

† Vol. II. p. 560.

ſom is paid. It is noted by ſome, that ſince the European voyagers have carried away ſeveral of theſe people, their miſtruſt is ſo great, that it is very difficult to prevail on them to come on board. Smith remarks, "As we paſt along this coaſt, we very often lay before a town, and fired a gun for the natives to come off; but no ſoul came near us: at length we learnt by ſome ſhips that were trading down the coaſt, that the natives came ſeldom on board an Engliſh ſhip, for fear of being detained or carried off: yet at laſt ſome ventured on board; but if theſe chanced to ſpy any arms, they would all immediately take to their canoes, and make the beſt of their way home. They had then in their poſſeſſion one Benjamin Croſs, the mate of an Engliſh veſſel, who was detained by them to make repriſals for ſome of their men, who had formerly been carried away by ſome Engliſh veſſel." In the Collection we are told, "This villanous cuſtom is too often practiſed, chiefly by the Briſtol and Liverpool ſhips, and is a great detriment to the ſlave trade on the windward coaſt." John Snock, mentioned in Boſman‡, when on the coaſt, wrote, "We caſt anchor, but not one negro coming on board, I went on ſhore; and after having ſtaid a while on the ſtrand, ſome negroes came to me; and being deſirous to be informed why they did not come on board, I was anſwered, that about two months before, the Engliſh had been there with two large veſſels, and had ravaged the country, deſtroyed all their canoes, plundered their houſes, and carried off ſome of their people, upon which the remainder fled to the inland country, where moſt of them were at that time; ſo that there being not much to be done by us, we were obliged to return on board. When I inquired after their wars with other countries, they told me they were not often troubled with them; but if any difference happened, they choſe rather to end the diſpute amicably than to come to arms.†" He found the inhabitants civil and good natured. Speaking of the king of Rio Seſtro, lower down the coaſt, he ſays, "He was a very agreeable, obliging man; and all his ſubjects are civil, as well as very laborious in agriculture and the purſuits of trade." Marchais ‡ ſays, "That though the country is very populous, yet none of the natives (except criminals) are ſold for ſlaves." Valliant never heard of any ſettlement being made by the Europeans on this part of Guinea; and Smith remarks§, "That theſe coaſts, which are divided into ſeveral little kingdoms, and have ſeldom any wars, is the reaſon the ſlave trade is not ſo good here as on the Gold and Slave Coaſt, where the Europeans have ſeveral forts and factories." A plain evidence this, that it is the intercourſe with the Europeans, and their ſettlements on the coaſt which gives life to the ſlave trade.

3. Next adjoining to the Ivory Coaſt are thoſe called the *Gold Coaſt* and the *Slave Coaſt*; authors are not agreed about their bounds, but their extent together along the coaſt may be about 500 miles. And as the policy, produce, and economy of theſe two kingdoms of Guinea are much the ſame, they ſhall be deſcribed together.

Here the Europeans have the greateſt number of forts and factories; from whence, by means of the negro factors, a trade is carried on above 700 miles back in the inland country; whereby great numbers of ſlaves are procured, as well by means of the wars which ariſe amongſt the negroes, or are fomented by the Europeans, as thoſe brought from the back country. Here we find the natives more reconciled to the European manners and trade; but, at the ſame time, much more inured to war, and ready to aſſiſt the European traders in procuring loadings for the great number of veſſels which come yearly on thoſe coaſts for ſlaves. This part of Guinea is agreed by hiſtorians to be in general, extraordinary fruitful and agreeable; producing (according to the difference of the ſoil) vaſt quantities of rice and other grain, plenty of fruit and roots, palm wine and oil, and fiſh in great abundance, with much tame and wild cattle. Boſman, principal factor for the Dutch at D'Elmina, ſpeaking of the country of Axim, which is ſituated towards the beginning of the Gold Coaſt, ſays, "The Negro inhabitants are generally very rich, driving a great trade with the Europeans for gold: That they are induſtriouſly employed either in trade, fiſhing, or agriculture; but chiefly in the culture of rice, which grows here in an incredible abundance, and is tranſported hence all over the Gold Coaſt: the inhabitants, in lieu, returning full fraught with millet, jamms, potatoes, and palm oil." The ſame author, ſpeaking of the country of Ante, ſays, "This country, as well as the Gold Coaſt, abounds with hills, enriched with extraordinary high and beautiful trees; its valleys, betwixt the hills, are wide and extenſive, producing in great abundance very good rice, millet, jamms, potatoes, and other fruits, all good in their kind." He adds, "In ſhort, it is a land that yields its manurers as plentiful a crop as they can wiſh, with great quantities of palm wine and oil, beſides being well furniſhed with all ſorts of tame as well as wild beaſts; but that the laſt fatal wars had reduced it to a miſerable condition, and ſtripped it of moſt of its inhabitants." The adjoining country of Fetu, he ſays, "was formerly ſo powerful and populous, that it ſtruck terror into all the neighbouring nations; but it is at preſent ſo drained by continual wars, that it is entirely ruined; there does not remain inhabitants ſufficient to till the country, though it is ſo fruitful and pleaſant that it may be compared to the country of Ante juſt before deſcribed; frequently (ſays our author), when walking through it before the laſt war, I have ſeen it abound with fine well built and populous towns, agreeably enriched with vaſt quantities of corn, cattle, palm wine, and oil. The inhabitants all applying themſelves without any diſtinction to agriculture; ſome ſow corn, others preſs oil, and draw wine from palm trees, with both which it is plentifully ſtored."

Smith gives much the ſame account of the beforementioned parts of the Gold Coaſt; and adds, "the country about D'Elmina and Cape Coaſt, is much the ſame for beauty and goodneſs, but more populous; and the nearer we come towards the Slave Coaſt, the more delightful and rich all the countries are, producing all ſorts of trees, fruits, roots, and herbs, that grow within the torrid zone." Barbot alſo remarks*, with reſpect to the countries of Ante and Adom, "That the ſoil is very good and fruitful in corn and other produce; which it affords in ſuch plenty, that beſides what ſerves for their own uſe, they always export great quantities for ſale: they have a competent number of cattle, both tame and wild, and the rivers abundantly ſtored with fiſh; ſo that nothing is wanting for the ſupport of life, and to make it eaſy." In the Collection it is ſaid "That the inland people on that part of the coaſt employ themſelves in tillage and trade, and ſupply the market with corn, fruit, and palm wine; the country producing ſuch vaſt plenty of Indian corn, that abundance is daily exported, as well by Europeans as blacks reſorting thither from other parts." Theſe inland people are ſaid to live in great union and friendſhip, being generally well tempered, civil, and tractable; not apt to ſhed human blood, except when much provoked; and ready to aſſiſt one another. In the Collection it is ſaid, "That the fiſhing buſineſs is eſteemed on the Gold Coaſt next to trading; that thoſe who profeſs it are more numerous than thoſe of other employments. That the greateſt number of theſe are at Kommendo, Mina, and Kormantin; from each of which places, there go out every morning (Tueſday excepted, which is the Fetiſh day, or day of reſt) five, ſix, and ſometimes eight hundred canoes, from 13 to 14 feet long, which ſpread themſelves two leagues at ſea, each fiſherman carrying in his canoe a ſword, with bread, water, and a little fire on a large ſtone to roaſt fiſh. Thus they labour till noon, when the ſea breeze blowing freſh, they return on the ſhore, generally laden with fiſh; a quantity of which the inland inhabitants come down to buy, which they ſell again at the country markets."

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‡ *Deſcription of Guinea*, p. 440.

† *Ibid.* p. 441.

‡ *Aſtley's Collect.* vol. ii. p. 565.

§ *Smith's Voyage to Guinea*, p. 112.

* *Barbot's Deſcription of Guinea*, p. 154.

Smith ſays, "The country about Acra, where the Engliſh and Dutch have each a ſtrong fort, is very delightful, and the natives courteous and civil to ſtrangers." He adds, "That this place ſeldom fails of an extraordinary good trade from the inland country, eſpecially for ſlaves, whereof ſeveral are ſuppoſed to come from very remote parts, becauſe it is not uncommon to find a Malayan or two amongſt a parcel of other ſlaves: The Malayan people are generally natives of Malacca, in the Eaſt-Indies, ſituated ſeveral thouſand miles from the Gold Coaſt." They differ very much from Guinea negroes, being of a tawny complexion, with long black hair.

Moſt parts of the ſlave coaſts are repreſented as equally fertile and pleaſant with the gold coaſt. The kingdom of Whidah has been particularly noted by travellers. Smith and Boſman agree, "That it is one of the moſt delightful countries in the world. The great number and variety of tall, beautiful, and ſhady trees, which ſeem planted in groves; the verdant fields every where cultivated, and no otherwiſe divided than by thoſe groves, and in ſome places a ſmall foot-path, together with a great number of villages, contribute to afford the moſt delightful proſpect; the whole country being a fine, eaſy, and almoſt imperceptible aſcent for the ſpace of 40 or 50 miles from the ſea. That the farther you go from the ſea, the more beautiful and populous the country appears. That the natives were kind and obliging, and ſo induſtrious, that no place which was thought fertile could eſcape being planted, even within the hedges which incloſe their villages. And that the next day after they had reaped, they ſowed again."

Snelgrave alſo ſays, "The country appears full of towns and villages; and being a rich ſoil, and well cultivated, looks like an entire garden." In the Collection, the huſbandry of the negroes is deſcribed to be carried on with great regularity. "The rainy ſeaſon approaching, they go into the fields and woods, to fix on a proper place for ſowing; and as here is no property in ground, the king's licence being obtained, the people go out in troops, and firſt clear the ground from buſhes and weeds, which they burn. The field thus cleared, they dig it up a foot deep, and ſo let it remain for eight or ten days, till the reſt of their neighbours have diſpoſed their ground in the ſame manner. They then conſult about ſowing, and for that end aſſemble at the king's court the next fetiſh day. The king's grain muſt be ſown firſt. They then go again to the field, and give the ground a ſecond digging, and ſow their ſeed. Whilſt "the king or governor's land is ſowing, he ſends out wine and fleſh, ready dreſſed, enough to ſerve the labourers. Afterwards, they in like manner ſow the ground allotted for their neighbours as diligently as that of the king's, by whom they are alſo feaſted; and ſo continue to work in a body for the public benefit till every man's ground is tilled and ſowed. None but the kings, and a few great men, are exempted from this labour. Their grain ſoon ſprouts out of the ground. When it is about a man's height, and begins to ear, they raiſe a wooden houſe in the centre of the field, covered with ſtraw, in which they ſet their children to watch their corn, and fright away the birds."

Boſman ſpeaks in commendation of the civility, kindneſs, and great induſtry of the natives of Whidah. This is confirmed by Smith, who ſays, "The natives here ſeem to be the moſt gentleman-like negroes in Guinea, abounding with good manners and ceremony to each other. The inferior pay the utmoſt deference and reſpect to the ſuperior, as do wives to their huſbands, and children to their parents. All here are naturally induſtrious, and find conſtant employment; the men in agriculture, and the women in ſpinning and weaving cotton. The men, whoſe chief talent lies in huſbandry, are unacquainted with arms; otherwiſe, being a numerous people, they could have made a better defence againſt the king of Dahome, who ſubdued them without much trouble." According to the Collection, there are, throughout the gold coaſt, regular markets in all villages, furniſhed with proviſions and merchandiſe, held every day in the week except Tueſday, whence they ſupply not only the inhabitants, but the European ſhips. The negro women are very expert in buying and ſelling, and extremely induſtrious; for they will repair daily to market from a conſiderable diſtance, loaded like pack-horſes, with a child perhaps at their back, and a heavy burden on their heads. After ſelling their wares, they buy fiſh and other neceſſaries, and return home loaded as they came. There is a market held at Sabi every fourth day, alſo a weekly one in the province of Apologua, which is ſo reſorted to, that there are uſually 5 or 6000 merchants. Their markets are ſo well regulated and governed, that ſeldom any diſorder happens; each ſpecies of merchandiſe and merchants have a ſeparate place allotted them by themſelves. The buyers may haggle as much as they will, but it muſt be without noiſe or fraud. To keep order, the king appoints a judge; who, with four officers well armed, inſpect the markets, hears all complaints, and in a ſummary way decides all differences; he has power to ſeize, and ſell as ſlaves, all who are catched in ſtealing or diſturbing the peace. In theſe markets are to be ſold men, women, children, oxen, ſheep, goats, and fowls of all kinds; European cloths, linen and woollen; printed calicoes, ſilk, grocery ware, china, gold-duſt, iron in bars, &c. in a word, moſt ſorts of European goods, as well as the produce of Africa and Aſia. They have other markets, reſembling our fairs once or twice a year, to which all the country repair; for they take care to order the day ſo in different governments as not to interfere with each other."

With reſpect to government, Smith ſays, * "that the gold coaſt and ſlave coaſt are divided into different diſtricts, ſome of which are governed by their chiefs or kings; the others, being more of the nature of a commonwealth, are governed by ſome of the principal men, called *Caboceros;* who, Boſman ſays, are properly denominated *civil fathers,* whoſe province is to take care of the welfare of the city or village, and to appeaſe tumults." But this order of government has been much broken ſince the coming of the Europeans. Both Boſman and Barbot mention murder and adultery to be ſeverely puniſhed on the coaſt, frequently by death; and robbery by a fine proportionable to the goods ſtolen.

* *Smith,* p. 193.

The income of ſome of the kings is large. Boſman ſays, "that the king of Whidah's revenues and duties on things bought and ſold are conſiderable; he having the tithe of all things ſold in the market, or imported into the country." Both the abovementioned authors ſay, the tax on ſlaves ſhipped off in this king's dominions, in ſome years, amounts to near L. 20,000.

Boſman tells us, the Whidah negroes have a faint idea of a true God, aſcribing to him the attributes of almighty power and omnipreſence: but God, they ſay, is too high to condeſcend to think of mankind; wherefore he commits the government of the world to thoſe inferior deities which they worſhip." Some authors ſay, the wiſeſt of theſe negroes are ſenſible of their miſtake in this opinion; but dare not forſake their own religion, for fear of the populace riſing and killing them. This is confirmed by Smith, who ſays, "that all the natives of this coaſt believed there is one true God, the author of them and all things; that they have ſome apprehenſion of a future ſtate; and that almoſt every village has a grove, or public place of worſhip, to which the principal inhabitants, on a ſet day, reſort to make their offerings."

In the Collection it is remarked as an excellency in the Guinea government, "that however poor they may be in general, yet there are no beggars to be found amongſt them; which is owing to the care of their chief men, whoſe province it is to take care of the welfare of the city or village, it being part of their office to ſee that ſuch people may earn their bread by their labour; ſome are ſet to blow the ſmith's bellows, others to preſs palm oil, or grind colours for their mats, and ſell proviſion in the markets. The young men are liſted to ſerve as ſoldiers, ſo that they ſuffer no common beggar." Boſman aſcribes a further reaſon for this good order*, viz. "that when a negro finds he cannot ſubſiſt, he binds himſelf for a certain ſum of money, and the maſter to whom he is bound is obliged to find him neceſſaries; that the maſter ſets him a ſort of taſk, which is not in the leaſt ſlaviſh, being chiefly to defend his maſter on occaſions, or in ſowing time to work as much as himſelf pleaſes."

* *Boſman,* p. 119.

Adjoining to the kingdom of Whidah are ſeveral ſmall governments, as Coto, great and ſmall Popo, Ardrah, &c. all ſituated on the ſlave coaſt, where the chief trade for ſlaves is carried on. Theſe are governed by their reſpective kings, and follow much the ſame cuſtoms with thoſe of Whidah, except that their principal living is on plunder and the ſlave trade.

4. Next adjoining to the Slave Coaſt, is the kingdom of Benin, which, though it extends but about 170 miles on the ſea, yet ſpreads ſo far inland as to be eſteemed the moſt potent kingdom in Guinea. By accounts, the ſoil and produce appear to be in a great meaſure like thoſe before deſcribed, and the natives are repreſented as a reaſonable good-natured people. Artus ſays*, "they are a ſincere, inoffenſive people, and do no injuſtice either to one another or to ſtrangers." Smith confirms this account, and ſays, "that the inhabitants are generally very good-natured, and exceeding courteous and civil. When the Europeans make them preſents, which in their coming thither to trade they always do, they endeavour to return them doubly." Boſman tells us, "that his countrymen the Dutch, who were often obliged to truſt them till they returned the next year, were ſure to be honeſtly paid their whole debts."

* *Collect.* vol. iii. p. 288.

There is in Benin a conſiderable order in government; theft, murder, and adultery, being ſeverely puniſhed. Smith ſays, "their towns are governed by officers appointed by the king, who have power to decide in civil caſes, and to raiſe the public taxes; but in criminal caſes, they muſt ſend to the king's court, which is held at the town of Oedo or Great Benin. This town, which covers a large extent of ground, is about 60 miles from the ſea." Barbot tells us, "that it contains 30 ſtreets, 20 fathom wide, and almoſt two miles long, commonly extending in a ſtraight line from one gate to another; that the gates are guarded by ſoldiers; that in theſe ſtreets markets are held every day, for cattle, ivory, cotton, and many ſorts of European goods. This large town is divided into ſeveral wards or diſtricts, each governed by its reſpective king of a ſtreet, as they call them, to adminiſter juſtice, and to keep good order. The inhabitants are very civil and good natured, condeſcending to what the Europeans require of them in a civil way." The ſame author confirms what has been ſaid by others of their juſtice in the payment of their debts; and adds, "that they, above all other Guineans, are very honeſt and juſt in their dealings; and they have ſuch an averſion for theft, that by the law of the country it is puniſhed with death." We are told by the ſame author, "that the king of Benin is able upon occaſion to maintain an army of 100,000 men; but that, for the moſt part, he does not keep 30,000. See the article BENIN.

5. The laſt diviſion of Guinea from which ſlaves are imported, are the kingdoms of *Congo* and *Angola:* theſe lie to the ſouth of Benin, extending with the intermediate land about 1200 miles on the coaſt. Great numbers of the natives of both theſe kingdoms profeſs the Chriſtian religion, which was long ſince in-

introduced by the Portugueſe, who made early ſettlements in that country. See Congo and Angola.

In the Collection it is ſaid, that both in Congo and Angola, the ſoil is in general fruitful, producing great plenty of grain, Indian corn, and ſuch quantities of rice, that it hardly bears any price, with fruits, roots, and palm oil in plenty. The natives are generally a quiet people, who diſcover a good underſtanding, and behave in a friendly manner to ſtrangers, being of a mild converſation, affable, and eaſily overcome with reaſon. In the government of Congo, the king appoints a judge in every particular diviſion, to hear and determine diſputes and civil cauſes; the judges impriſon and releaſe, or impoſe fines, according to the rule of cuſtom; but in weighty matters, every one may appeal to the king, before whom all criminal cauſes are brought, in which he giveth ſentence; but ſeldom condemneth to death. The town of Leango ſtands in the midſt of four lordſhips, which abound in corn, fruits, &c. Here they make great quantities of cloth of divers kinds, very fine and curious; the inhabitants are ſeldom idle; they even make needle-work caps as they walk in the ſtreets. The ſlave trade is here principally managed by the Portugueſe, who carry it far up into the inland countries. They are ſaid to ſend off from theſe parts 15,000 ſlaves each year. At Angola, about the tenth degree of ſouth latitude, ends the trade for ſlaves.

As all theſe countries lie between the tropics, the air is exceſſively hot, eſpecially from the beginning of September to the end of March; which, with the coolneſs of the nights, the frequent thick, ſtinking, ſulphureous miſts, and the periodical rains, when the flat country is overflowed, makes it very unhealthy, eſpecially to Europeans. The natives, however, are little affected with the unwholeſome air. According to Barbot, they keep much within doors in tempeſtuous times; and when expoſed to the weather, their ſkins being ſuppled and pores cloſed by daily anointing with palm oil, the weather can make but little impreſſion on them. They generally, therefore, enjoy a good ſtate of health, and are able to procure to themſelves a comfortable ſubſiſtence, with much leſs care and toil than is neceſſary in our more northern climate; which laſt advantage ariſes not only from the warmth of the climate, but alſo from the overflowing of the rivers, whereby the land is regularly moiſtened and rendered extremely fertile, and being in many places improved by culture, abounds with grain and fruits, cattle, poultry, &c. The earth yields all the year a freſh ſupply of food: Few clothes are requiſite, and little art neceſſary in making them, or in the conſtruction of their houſes, which are very ſimple, principally calculated to defend them from the tempeſtuous ſeaſons and wild beaſts; a few dry reeds covered with matts ſerve for their beds. The other furniture, except what belongs to cookery, gives the women but little trouble; the moveables of the greateſt among them only amounting to a few earthen pots, ſome wooden utenſils, and gourds or calabaſhes; from theſe laſt, which grow almoſt naturally over their huts, to which they afford an agreeable ſhade, they are abundantly ſtocked with good clean veſſels for moſt houſehold uſes, being of different ſizes, from half a pint to ſeveral gallons.

The diſtempers the Europeans are ſubject to on this coaſt, are fevers, fluxes, and colics, which are occaſioned by indifferent water and bad air; their ſettlements lying near the coaſt, where the fogs and ſteams ariſing from the ooze and ſalt-marſhes, and the ſtinking fiſh the natives dry on the beach, corrupt the air, and render it fatal to the foreigners. The moſt temperate men find it difficult to preſerve their health; but a great many haſten their death by their intemperance, or negligence, expoſing themſelves to the cold air in the evening, after a very hot day. This ſudden change, from one extreme to the other, has often very bad effects in hot climates.

Of mountains in Guinea, the moſt remarkable are thoſe of Sierra Leona. The principal capes are thoſe of Cape Blanco, Cape Verd, Cape Leon, Cape St Ann's, Cape Palmas, and Cape Three-Poins, Cape Formoſa, Cape Monte, Cape St John, Cape Lopas, Cape Lede, and Cape Negro. The chief bays are the Cyprian or Cintra Bay, and the Bite of Guinea. Of the rivers, the moſt conſiderable are thoſe of Coanzo and Ambriſi, the Zaara, the Lunde, the Cameron, the Formoſa, the Volta, the Sierra Leon, and the Sherbro. All theſe run from eaſt to weſt (except the Volta, which runs from north to ſouth), and fall into the Atlantic.

Beſides gold, ivory, and ſlaves, Guinea affords indigo, wax, gum-ſenega, gum-tragacanth, and a variety of other gums and drugs.

Hiſtory of the Guinea trade.

The moſt ancient account we have of the country of the negroes, particularly that part ſituated on and between the two great rivers of Senegal and Gambia, is from the writings of two ancient authors, one an Arabian, and the other a Moor. The firſt wrote in Arabic about the 12th century. His works, printed in that language at Rome, were afterwards tranſlated into Latin, and printed at Paris under the patronage of the famous Thuanus chancellor of France, with the title of *Geographica Nubienſis*, containing an account of all the nations lying on the Senegal and Gambia. The other was written by John Leo, a Moor, born at Granada in Spain, before the Moors were totally expelled from that kingdom. He reſided in Africa; but being on a voyage from Tripoli to Tunis, was taken by ſome Italian corſairs, who finding him poſſeſſed of ſeveral Arabian books, beſides his own manuſcripts, apprehended him to be a man of learning, and as ſuch preſented him to Pope Leo X. This pope encouraging him, he embraced the Romiſh religion, and his deſcription of Africa was publiſhed in Italian. From theſe writings we gather, that after the Mahometan religion had extended to the kingdom of Morocco, ſome of the promoters of it croſſing the ſandy deſarts of Numidia, which ſeparate that country from Guinea, found it inhabited by men, who, though under no regular government, and deſtitute of that knowledge the Arabians were favoured with, lived in content and peace. The firſt author particularly remarks, "that they never made war, or travelled abroad, but employed themſelves in tending their herds, or labouring in the ground." J. Leo ſays, p. 65. "That they lived in common, having no property in land, no tyrant nor ſuperior lord, but ſupported themſelves in an equal ſtate, upon the natural produce of the country, which afforded plenty of roots, game, and honey.

That ambition or avarice never drove them into foreign countries to ſubdue or cheat their neighbours. Thus they lived without toil or ſuperfluities.” “The ancient inhabitants of Morocco, who wore coats of mail, and uſed ſwords and ſpears headed with iron, coming amongſt theſe harmleſs and naked people, ſoon brought them under ſubjection, and divided that part of Guinea which lies on the rivers Senegal and Gambia into 15 parts; thoſe were the 15 kingdoms of the negroes, over which the Moors preſided, and the common people were negroes. Theſe Moors taught the negroes, the Mahometan religion, and arts of life; particularly the uſe of iron, before unknown to them. About the 14th century, a native negro, called *Heli Iſchia*, expelled the Mooriſh conquerors; but though the negroes threw off the yoke of a foreign nation, they only changed a Libyan for a negro maſter. Heli Iſchia himſelf becoming king, led the negroes on to foreign wars, and eſtabliſhed himſelf in power over a very large extent of country.” Since Leo's time, the Europeans have had very little knowledge of thoſe parts of Africa, nor do they know what became of this great empire. It is highly probable that it broke into pieces, and that the natives again reſumed many of their ancient cuſtoms; for in the account publiſhed by Moore, in his travels on the river Gambia, we find a mixture of the Mooriſh and Mahometan cuſtoms, joined with the original ſimplicity of the negroes. It appears by accounts of ancient voyages, collected by Hackluit, Purchas and others, that it was about 50 years before the diſcovery of America, that the Portugueſe attempted to ſail round Cape Bojador, which lies between their country and Guinea: this, after divers repulſes occaſioned by the violent currents, they effected; when landing on the weſtern coaſts of Africa, they ſoon began to make incurſions into the country, and to ſeize and carry off the native inhabitants. As early as the year 1434, Alonzo Gonzales, the firſt who is recorded to have met with the natives, being on that coaſt, purſued and attacked a number of them, when ſome were wounded, as was alſo one of the Portugueſe; which the author records as the firſt blood ſpilt by Chriſtians in thoſe parts. Six years after, the ſame Gonzales again attacked the natives, and took 12 priſoners, with whom he returned to his veſſels: he afterwards put a woman on ſhore, in order to induce the natives to redeem the priſoners; but the next day 150 of the inhabitants appeared on horſes and camels, provoking the Portugueſe to land; which they not daring to venture, the natives diſcharged a volley of ſtones at them, and went off. After this, the Portugueſe ſtill continued to ſend veſſels on the coaſt of Africa: particularly we read of their falling on a village, whence the inhabitants fled, and, being purſued, 25 were taken; “he that ran beſt (ſays the author), taking the moſt. In their way home they killed ſome of the natives, and took 55 more priſoners. Afterwards Diniſanes Dagrama, with two other veſſels, landed on the iſland Arguin, where they took 54 moors; then running along the coaſt 80 leagues farther, they at ſeveral times took 50 ſlaves; but here ſeven of the Portugueſe were killed. Then being joined by ſeveral other veſſels, Diniſanes propoſed to deſtroy the iſland, to revenge the loſs of the ſeven Portugueſe; of which the Moors being appriſed, fled, ſo that no more than 12 were found, whereof only four could be taken, the reſt being killed, as alſo one of the Portugueſe.” Many more captures of this kind on the coaſt of Barbary and Guinea are recorded to have been made in thoſe early times by the Portugueſe; who, in the year 1481, erected their firſt fort at D'Elmina on that coaſt, from whence they ſoon opened a trade for ſlaves with the inland parts of Guinea.

From the foregoing accounts, it is undoubted, that the practice of making ſlaves of the negroes owes its origin to the early incurſions of the Portugeſe on the coaſt of Africa, ſolely from an inordinate deſire of gain. This is clearly evidenced from their own hiſtorians, particularly Cada Moſto, about the year 1455, who writes*, “That before the trade was ſettled for purchaſing ſlaves from the Moors at Arguin, ſometimes four, and ſometimes more Portugueſe veſſels, were uſed to come to that gulph, well armed; and, landing by night, would ſurpriſe ſome fiſhermen's villages: that they even entered into the country, and carried off Arabs of both ſexes, whom they ſold in Portugal.” And alſo, “That the Portugueſe and Spaniards, ſetled on four of the Canary iſlands, would go to the other iſland by night, and ſeize ſome of the natives of both ſexes, whom they ſent to be ſold in Spain.”

After the ſettlement of America, thoſe devaſtations, and the captivating the miſerable Africans, greatly increaſed.

Anderſon, in his Hiſtory of Trade and Commerce, p. 336, ſpeaking of what paſſed in the year 1508, writes, “That the Spaniards had by this time found that the miſerable Indian natives, whom they had made to work in their mines and fields, were not ſo robuſt and proper for thoſe purpoſes as negroes brought from Africa: wherefore they, about that time, began to import negroes for that end into Hiſpaniola, from the Portugueſe ſettlements on the Guinea coaſts; and alſo afterwards for their ſugar-works.”

It was about the year 1551, towards the latter end of the reign of Edward VI. when ſome London merchants ſent out the firſt Engliſh ſhip on a trading voyage to the coaſt of Guinea. This was ſoon followed by ſeveral others to the ſame parts; but the Engliſh not having then any plantations in the Weſt-Indies, and conſequently no occaſion for negroes, ſuch ſhips traded only for gold, elephants teeth, and Guinea pepper. This trade was carried on at the hazard of loſing their ſhips and cargoes, if they had fallen into the hands of the Portugueſe, who claimed an excluſive right of trade, on account of the ſeveral ſettlements they had made there. In 1554, we find captain Thomas Windham trading along the coaſt with 140 men, in three ſhips, and ſailing as far as Benin, which lies about 3000 miles down the coaſt, to take in a load of pepper. Next year John Lock traded along the coaſt of Guinea as far as D'Elmina, when he brought away conſiderable quantities of gold and ivory. He ſpeaks well of the natives, and ſays, “That whoever will deal with them muſt behave civilly, for they will not traffic if ill uſed.” In 1555, William Towerſon traded in a peaceable manner with the natives, who made complaint to him of the Portugueſe, who were then ſettled in their caſtle at D'Elmina; ſaying, “They were bad men; who made them ſlaves if they could take them, putting irons on their legs.”

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* *Collection*, vol. i. p. 576.

This bad example of the Portugueſe was ſoon followed by ſome evil diſpoſed Engliſhmen: for the ſame captain Towerſon relates*, “ That in the courſe of his voyage, he perceived the natives near D'Elmina unwilling to come to him, and that he was at laſt attacked by them; which he underſtood was done in revenge for the wrong done them the year before by one captain Gainiſh, who had taken away the negro captain's ſon and three others, with their gold, &c. This cauſed them to join the Portugueſe, notwithſtanding their hatred of them, againſt the Engliſh.” The next year captain Towerſon brought theſe men back again; whereupon the negroes ſhowed him much kindneſs. Quickly after this, another inſtance of the ſame kind occurred in the caſe of Captain George Fenner, who being on the coaſt with three veſſels, was alſo attacked by the negroes, who wounded ſeveral of his people, and violently carried three of his men to their town. The captain ſent a meſſenger, offering any thing they deſired for the ranſom of his men: but they refuſed to deliver them; letting him know, “ That three weeks before an Engliſh ſhip, which came in the road, had carried off three of their people; and that till they were brought again, they would not reſtore his men, even though they ſhould give their three ſhips to releaſe them.” It was probably the evil conduct of theſe and ſome other Engliſhmen which was the occaſion of what is mentioned in Hill's Naval Hiſtory, viz. “ That when captain Hawkins returned from his firſt voyage to Africa, queen Elizabeth ſent for him, when ſhe expreſſed her concern, leſt any of the African negroes ſhould be carried off without their free conſent; which ſhe declared would be deteſtable, and would call down the vengeance of heaven upon the undertakers.” Hawkins made great promiſes, which nevertheleſs he did not perform; for his next voyage to the coaſt appears to have been principally calculated to procure negroe ſlaves, in order to ſell them to the Spaniards in the Weſt Indies; which occaſioned the ſame author to uſe theſe remarkable words: “ Here began the horrid practice of forcing the Africans into ſlavery: an injuſtice and barbarity, which, ſo ſure as there is vengeance in heaven for the worſt of crimes, will ſome time be the deſtruction of all who act or who encourage it.” This captain Hawkins, afterwards Sir John Hawkins, ſeems to have been the firſt Engliſhman who gave public countenance to this wicked traffic: for Anderſon, before mentioned, at p. 401, ſays, “ That in the year 1562, captain Hawkins, aſſiſted by ſubſcription of ſundry gentlemen, now fitted out three ſhips; and having learnt that negroes were a very good commodity in Hiſpaniola, he ſailed to the coaſt of Guinea, took in negroes; and ſailed with them for Hiſpaniola, where he ſold them, and his Engliſh commodities, and loaded his three veſſels with hides, ſugar, ginger, &c. with which he returned home anno 1563, making a proſperous voyage.” As it proved a lucrative buſineſs, the trade was continued both by Hawkins and others, as appears from the Naval Chronicle, p. 55; where it is ſaid, “ That on the 18th of October 1564, captain John Hawkins, with two ſhips of 700 and 140 tons, ſailed for Africa; that on the 8th of December they anchored to the South of Cape Verd, where the captain manned the boat, and ſent 80 men in armour into they country, to ſee if they could take ſome negroes; but the natives flying from them, they returned to their ſhips, and proceeded farther down the coaſt. Here they ſtaid certain days, ſending their men a ſhore, in auhor (as the author ſays) to burn and ſpoil their towns and take the inhabitants. The land they obſerved to be well cultivated, there being plenty of grain and fruit of ſeveral ſorts, and the towns prettily laid out. On the 25th, being informed by the Portugueſe of a town of negroes called *Bymba*, where there was not only a quantity of gold, but 140 inhabitants, they reſolved to attack it, having the Portugueſe for their guides; but by miſmanagement they took but ten negroes, having ſeven of their own men killed and 27 wounded. They then went farther down the coaſt; when having procured a number of negroes, they proceeded to the Weſt Indies, where they ſold them to the Spaniards.” And in the ſame Naval Chronicle, at p. 76, it is ſaid, “that in the year 1567, Francis Drake, before performing his voyage round the world, went with Sir John Hawkins in his expedition to the coaſt of Guinea, where taking in a cargo of ſlaves, they determined to ſteer for the Caribbee iſlands.” How queen Eliſabeth ſuffered ſo grievous an infringement of the rights of mankind to be perpetrated by her ſubjects, and how ſhe was perſuaded, about the 30th year of her reign, to grant patents for carrying on a trade from the north part of the river Senegal to 100 leagues beyond Siera Leona, which gave riſe to the African Company †, is hard to account for, any otherwiſe than that it aroſe from the miſrepreſentation made to her of the ſituation of the negroes, and of the advantages it was pretended they would reap from being made acquainted with the Chriſtian religion. This was the caſe of Louis XIII. of France: who, Labat, in his account of the iſles of America, tells us, “ was extremely uneaſy at a law by which the negroes of his colonies were to be made ſlaves; but it being ſtrongly urged to him as the readieſt means of their converſion to Chriſtianity, he acquieſced therewith.” Nevertheleſs, ſome of the Chriſtian powers did not ſo eaſily give way in this matter: for we find ‡, “ that Cardinal Cibo, one of the pope's principal miniſters of ſtate, wrote a letter on behalf of the college of cardinals, or great council at Rome, to the miſſionaries in Congo, complaining that the pernicious and abominable abuſe of ſelling ſlaves was yet continued; requiring them to remedy the ſame if poſſible; but this the miſſionaries ſaw little hopes of accompliſhing, by reaſon that the trade of the country lay wholly in ſlaves and ivory.”

It has been urged in juſtification of this trade, that by purchaſing the captives taken in battle, they ſave the lives of ſo many human creatures, who otherwiſe would be ſacrificed to the implacable revenge of the victors. But this pretence has been refuted by an appeal to reaſon and fact. For if the negroes apprehended they ſhould be cruelly put to death if they were not ſent away; why, it is aſked, do they manifeſt ſuch reluctance and dread as they generally do, at being brought from their native country? Smith, in his Account, p. 28. ſays, “ The Gambians abhor ſlavery, and will attempt any thing, though ever ſo deſperate, to avoid it.” And Thomas Phiiips, in his account of a voyage he performed to the coaſt of Guinea, writes, “ They (the negroes) are ſo loth to leave

* *Collection*, vol. i. p. 148.

† See *Company*, vol. v. p. 225, 226.

‡ *Collection*, vol. iii. p. 164.

leave their own country, that they have often leaped out of the canoe, boat, or ſhip, into the ſea, and kept under water till they were drowned, to avoid being taken up." But had the fact even been otherwiſe, the above plea is urged with an extreme bad grace, when it is notorious that the very wars ſaid to be productive of ſuch cruelty were fomented by the infamous arts of the Europeans. From the foregoing accounts, as well as other authentic publications of this kind, it appears, that it was the unwarrantable luſt of gain which firſt ſtimulated the Portugueſe, and afterwards other Europeans, to engage in this horrid traffic. By the moſt unqueſtionable relations of thoſe early times, the natives were an inoffenſive people, who, when civilly uſed, traded amicably with the Europeans. It is recorded of thoſe of Benin, the largeſt kingdom in Guinea, that they were a gentle, loving, people; and Reynold ſays, "They found more ſincere proofs of love and good will from the natives, than they could find from the Spaniards and Portugueſe, even though they had relieved them from the greateſt miſery." And from the ſame relations there is no reaſon to think otherwiſe, but that they generally lived in peace amongſt themſelves; there occurring no accounts of any wars at that early period, nor of any ſale of captives taken in battle.

In fact it was long after the Portugueſe had made a practice of violently forcing the natives of Africa into ſlavery, that we read of the different negro nations making war upon each other, and ſelling their captives. And probably this was not the caſe, till thoſe bordering on the coaſt, who had been uſed to ſupply the veſſels with neceſſaries, had become corrupted by their intercourſe with the Europeans, and were excited by drunkenneſs and avarice to join them in carrying on thoſe wicked ſchemes, by which thoſe unnatural wars were perpetrated; the inhabitants kept in continual alarms; the country laid waſte; and, as Moore expreſſes it, "infinite numbers ſold into ſlavery." But that the Europeans are the principal cauſe of theſe devaſtations, is particularly evidenced by one whoſe connection with the trade would rather induce him to repreſent it in the faireſt colours, viz. Captain Smith, the perſon ſent in the year 1726 by the African company to ſurvey their ſettlements; who, from the information he received of one of the factors who had reſided ten years in that country, ſays, "That the diſcerning natives account it their greateſt unhappineſs, that they were ever viſited by the Europeans[*]." "That we Chriſtians introduced the traffic of ſlaves; and that before our coming they lived in peace."

In the accounts relating to the African trade, we find this melancholy truth farther aſſerted by ſome of the principal directors in the different factories; particularly A. Brue ſays[†], "That the Europeans were far from deſiring to act as peace-makers amongſt the negroes; which would be acting contrary to their intereſt, ſince the greater the wars, the more ſlaves were procured." And William Boſman alſo remarks[‡], "That one of the former commanders gave large ſums of money to the negroes of one nation, to induce them to attack ſome of the neighbouring nations; which occaſioned a battle which was more bloody than the wars of the negroes uſually are." This is confirmed by J. Barbot, who ſays, "That the country of D'Elmina, which was formerly very powerful and populous, was in his time ſo much drained of its inhabitants by the inteſtine wars fomented amongſt the negroes by the Dutch, that there did not remain inhabitants enough to till the country."

It has alſo been advanced as an argument in favour of keeping the negroes in bondage, that there are ſlaves in Guinea, and that thoſe amongſt us might be ſo in their own country. Not to dwell upon the inconſiſtency of our giving any countenance to ſlavery, becauſe the Africans, whom we eſteem a barbarous and ſavage people, allow of it, and perhaps the more from our example; the very circumſtance ſtated, when inquired into, muſt afford cauſe of bluſhing, rather than ſerve as a palliation of ſuch iniquitous conduct: for it will appear, that the ſlavery endured in Guinea is by no means ſo grievous as that in the colonies. Captain Moore, ſpeaking of the natives living on the river Gambia, ſays, "That ſome of the negroes have many houſe ſlaves; which are their great glory; that thoſe ſlaves live ſo well and eaſy, that it is ſometimes a hard matter to know the ſlaves from their maſters or miſtreſſes. And that though in ſome parts of Africa they ſell their ſlaves born in the family, yet on the river Gambia they think it a very wicked thing." The author adds, "He never heard of but one that ever ſold a family ſlave, except for ſuch crimes as they would have been ſold for if they had been free." And in Aſtley's Collection, ſpeaking of the cuſtoms of the negroes in that large extent of country further down the coaſt, particularly denominated the *Coaſt of Guinea*, it is ſaid, "They have not many ſlaves on the coaſt; none but the king or nobles are permitted to buy or ſell any; ſo that they are allowed only what are neceſſary for their families, or tilling the ground." The ſame author adds, "That they generally uſe their ſlaves well, and ſeldom correct them."

From the foregoing account of the natural diſpoſition of the negroes, and the fruitfulneſs of moſt parts of Guinea, which are confirmed by authors of candour, who have written from their own knowledge, it may well be concluded, that the negroes acquaintance with the Europeans might have been a happineſs to them: but theſe forgetful of their duty as men and Chriſtians, have conducted themſelves in ſo iniquitous a manner, as muſt neceſſarily raiſe in the minds of the thoughtful and well diſpoſed negroes the utmoſt ſcorn and deteſtation of the very name of Chriſtians. All other conſiderations have given way to an inſatiable deſire of gain, which has been the principal and moving cauſe of the moſt deteſtable and barbarous ſcene that was perhaps ever acted upon the face of the earth; inſtead of making uſe of that ſuperior knowledge with which the Almighty, the common Parent of mankind, had favoured them, to ſtrengthen the principle of peace and good will in the breaſts of the incautious negroes, the Europeans have, by their bad example, led them into exceſs of drunkenneſs, debauchery, and avarice: whereby every paſſion of corrupt nature being inflamed, they have been eaſily prevailed upon to make war and captivate one another, as well to furniſh means for the exceſſes they have been habituated to, as to ſatisfy the greedy deſire of gain in their profligate employers; who to this intent have furniſhed them with prodigious quantities of arms and ammunition

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[*] Smith, p. 266.

[†] *Collection*, vol. ii. p. 98.

[‡] p. 31.

tion. Thus they have been hurried into confuſion, diſtreſs, and all the extremities of temporal miſery; every thing, even the power of their kings, has been made ſubſervient to this wicked purpoſe; for inſtead of being protectors of their ſubjects, ſome of thoſe rulers, corrupted by the exceſſive love of ſpirituous liquors, and the tempting baits laid before them by the factors, have invaded the liberties of their unhappy ſubjects, and are become their oppreſſors.

Here it may be neceſſary to obſerve, that the accounts we have of the inhabitants of Guinea are chiefly given by perſons engaged in the trade, who, from ſelf-intereſted views, have deſcribed them in ſuch colours as were leaſt likely to excite compaſſion and reſpect, and endeavoured to reconcile ſo manifeſt a violation of the rights of mankind to the minds of the purchaſers; yet they cannot but allow the negroes to be poſſeſſed of ſome good qualities, though they contrive as much as poſſible to caſt a ſhade over them. A particular inſtance of this appears in Aſtley's Collection, vol. ii. p. 73; where the author, ſpeaking of the Mandingos ſettled at Galem, which is ſituated 900 miles up the Senegal, after ſaying that they carry on a commerce to all the neighbouring kingdoms, and amaſs riches, adds, "That excepting the vices peculiar to the blacks, they are a good ſort of people, honeſt, hoſpitable, juſt to their word, laborious, induſtrious, and very ready to learn arts and ſciences." Here it is difficult to imagine what vices can be peculiarly attendant on a people ſo well diſpoſed as the author deſcribes theſe to be. With reſpect to the charge ſome authors have brought againſt them, as being void of all natural affection, it is frequently contradicted by others. In vol. ii. of the Collection, p. 275 and 629. the negroes of North Guinea and the Gold Coaſt are ſaid to be fond of their children, whom they love with tenderneſs. And Boſman ſays, p. 340. "Not a few in his country (viz. Holland) fondly imagine, that parents here ſell their children, men their wives, and one brother the other: but thoſe who think ſo, deceive themſelves; for this never happens on any other account but that of neceſſity, or ſome great crime." The ſame is repeated by J. Barbot, p. 326, and alſo confirmed by Sir Hans Sloane in the introduction to his natural hiſtory of Jamaica; where, ſpeaking of the negroes, he ſays, "they are uſually thought to be haters of their own children; and therefore it is believed that they ſell and diſpoſe of them to ſtrangers for money: but this is not true; for the negroes of Guinea being divided into ſeven captainſhips, as well as the Indians of America, have wars; and beſides thoſe ſlain in battle, many priſoners are taken, who are ſold as ſlaves, and brought thither: but the parents here, although their children are ſlaves for ever, yet have ſo great love for them, that no maſters dare ſell or give away one of their little ones, unleſs they care not whether their parents hang themſelves or no." J. Barbot, ſpeaking of the occaſion of the natives of Guinea being repreſented as a treacherous people, aſcribes it to the Hollanders (and doubtleſs other Europeans) uſurping authority, and fomenting diviſions between the negroes. At p. 110, he ſays, "it is well known that many of the European nations trading amongſt theſe people, have very unjuſtly and inhumanly, without any provocation, ſtolen away, from time to time, abundance of the people, not only on this coaſt, but almoſt every where in Guinea, who have come on board their ſhips in a harmleſs and confiding manner: theſe they have in great numbers carried away, and ſold in the plantations, with other ſlaves which they had purchaſed." And although ſome of the negroes may be juſtly charged with indolence and ſupineneſs, yet many others are frequently mentioned by authors as a careful, induſtrious, and even laborious people.

By an enquiry into the laws and cuſtoms formerly in uſe, and ſtill in force amongſt the negroes, particularly on the Gold Coaſt, it will be found, that proviſion was made for the general peace, and for the ſafety of individuals; even in W. Boſman's time, long after the Europeans had eſtabliſhed the ſlave-trade, the natives were not publicly enſlaved, any otherwiſe than in puniſhment for crimes, when priſoners of war, or by a violent exertion of the power of their corrupted kings. Where any of the natives were ſtolen in order to be ſold to the Europeans, it was done ſecretly, or at leaſt only connived at by thoſe in power: this appears from Barbot and Boſman's account of the matter, both agreeing that man-ſtealing was not allowed on the Gold Coaſt. The firſt ſays, "Kidnapping or ſtealing of human creatures is puniſhed there, and even ſometimes with death." And Boſman, whoſe long reſidence on the coaſt enabled him to ſpeak with certainty, ſays, "That the laws were ſevere againſt murder, thievery, and adultery;" and adds, "That man-ſtealing was puniſhed on the Gold Coaſt with rigid ſeverity, and ſometimes with death itſelf." Hence it may be concluded, that the ſale of the greateſt part of the negroes to the Europeans is ſupported by violence, in defiance of the laws, through the knavery of their principal men, who (as is too often the caſe with thoſe in European countries), under pretence of encouraging trade, and increaſing the public revenue, diſregard the dictates of juſtice, and trample upon thoſe liberties which they are appointed to preſerve.

Moore alſo mentions man-ſtealing as being diſcountenanced by the negro governments on the river Gambia; and ſpeaks of the enſlaving the peaceable inhabitants, as a violence which only happens under a corrupt adminiſtration of juſtice. He ſays, "the kings of that country generally adviſe with their head men, ſcarcely doing any thing of conſequence without conſulting them firſt, except the king of Barſailay, who being ſubject to hard-drinking is very abſolute. It is to this king's inſatiable thirſt for brandy, that his ſubjects freedoms and families are in ſo precarious a ſituation. Whenever this king wants goods or brandy, he ſends a meſſenger to the Engliſh governor at James's Fort, to deſire he would ſend a ſloop there with a cargo: *this news being not at all unwelcome*, the governor ſends accordingly; againſt the arrival of the ſloop, the king goes and ranſacks ſome of his enemies towns, ſeizing the people, and ſelling them for ſuch commodities as he is in want of, which commonly are brandy, guns, powder, balls, piſtols, and cutlaſſes, for his attendants and ſoldiers; and coral and ſilver for his wives and concubines. In caſe he is not at war with any neighbouring king, he then falls upon one of his own towns, which are numerous, and uſes them in the ſame manner. He often goes with ſome of his troops by a town in the day time, and returning in the night, ſets fire to three parts of it, and putting guards at the fourth, there ſeizes the people as they run out from the fire ; he ties their arms behind them, and marches them either to Joar or Cohone, where he ſells them to the Europeans."

Mr Brue, the French director, gives much the ſame account, and ſays [*], " That having received goods, he wrote to the king, that if he had a ſufficient number of ſlaves, he was ready to trade with him. This prince, as well as the other negro monarchs, has always a ſure way of ſupplying his deficiencies, by ſelling his own ſubjects, for which they ſeldom want a pretence. The king had recourſe to this method, by ſeizing 300 of his own people, and ſent word to the director that he had the ſlaves ready to deliver for the goods." It ſeems the king wanted double the quantity of goods which the factor would give him for theſe 300 ſlaves ; but the factor refuſing to truſt him as he was already in the company's debt, and perceiving that this refuſal had put the king much out of temper, he propoſed that he ſhould give him a licence for taking ſo many more of his people as the goods he ſtill wanted were worth : but this the king refuſed, ſaying, *It* might occaſion a diſturbance amongſt his ſubjects." Except in the above inſtance, and ſome others, where the power of the negro kings is unlawfully exerted over their ſubjects, the ſlave-trade is carried on in Guinea with ſome regard to the laws of the country, which allow of none to be ſold but priſoners taken in their national wars, or people adjudged to ſlavery in puniſhment for crimes ; but the largeneſs of the country, the number of kingdoms or commonwealths, and the great encouragement given by the Europeans, afford frequent pretences and opportunities to the bold deſigning profligates of one kingdom, to ſurpriſe and ſeize upon not only thoſe of a neighbouring government, but alſo the weak and helpleſs of their own ; and the unhappy people, taken on thoſe occaſions, are, with impunity, ſold to the Europeans. Theſe practices are doubtleſs diſapproved of by the moſt conſiderate amongſt the negroes ; for Boſman acquaints us, that even their national wars are not agreeable to ſuch. He ſays, " If the perſon who occaſioned the beginning of the war be taken, they will not eaſily admit him to ranſom, though his weight in gold ſhould be offered, for fear he ſhould in future form ſome new deſign againſt their repoſe."

We ſhall conclude this article with the following account of the ſhocking methods uſed in the carrying on of the ſlave trade, as deſcribed by factors of different nations.

Mr Moore[†], a factor for the Engliſh African Company on the river Gambia, writes, " That there are a number of negro traders, called *joncoes*, or merchants, who follow the ſlave-trade as a buſineſs ; their place of reſidence is ſo high up the country as to be ſix weeks travel from James' Fort, which is ſituated at the mouth of that river. Theſe merchants bring down elephants teeth, and in ſome years 2000 ſlaves, moſt of which, they ſay, are priſoners taken in war. They buy them from the different princes who take them ; many of them are Bumbrongs and Petcharies ; nations who each of them have different languages, and are brought from a vaſt way inland. Their way of bringing them is tying them by the neck with leather thongs, at about a yard diſtant from each other, 30 or 40 in a ſtring having generally a bundle of corn or elephants teeth upon each of their heads. In their way from the mountains, they travel through very great woods, where they cannot for ſome days get water ; ſo they carry in ſkin bags enough to ſupport them for a time. I cannot (adds Moore) be certain of the number of merchants who follow this trade, but there may, perhaps, be about 100. who go up into the inland country with the goods which they buy from the white men, and with them purchaſe, in various countries, gold, ſlaves, and elephants teeth. Beſides the ſlaves which the merchants bring down, there are many bought along the river : Theſe are either taken in war, as the former are, or men condemned for crimes ; *or elſe people ſtolen, which is very frequent.*—Since the ſlave-trade has been uſed, all puniſhments are changed into ſlavery ; there being an advantage on ſuch condemnation, *they ſtrain for crimes very hard, in order to get the benefit of ſelling the criminal.*"

John Barbot, the French factor, in his account of the manner by which the ſlaves are procured, ſays, " The ſlaves ſold by the negroes are for the moſt part priſoners of war, or taken in the incurſions they make into their enemies territories ; others are ſtolen away by their neighbours, when found abroad on the road, or in the woods ; or elſe in the corn fields, at the time of the year when their parents keep them there all the day to ſcare away the devouring ſmall birds." Speaking of the tranſactions on that part of Guinea called the *Slave Coaſt*, where the Europeans have the moſt factories, and from whence they bring away much the greateſt number of ſlaves, the ſame author ſays, "The inhabitants of Coto do much miſchief in ſtealing thoſe ſlaves they ſell to the Europeans from the upland country.——That the inhabitants of Popo excell the former ; being endowed with a much larger ſhare of courage, they rob more ſucceſsfully, by which means they increaſe their riches and trade." The author particularly remarks, "*That they are encouraged in this practice by the Europeans*: ſometimes it happens, according to the ſucceſs of the inland excurſions, that they are able to furniſh 200 ſlaves, or more, in a few days." And he ſays, " The blacks of Fida, or Whidah, are ſo expeditious in trading for ſlaves, that they can deliver 1000 every month."—"If there happens to be no ſtock of ſlaves there, the factor muſt truſt the blacks with his goods, to the value of 150 l. or 200 l. which goods they carry up into the inland country to buy ſlaves at all markets for above 600 miles up the country, where they are kept like cattle in Europe ; the ſlaves ſold there being generally priſoners of war, taken from their enemies like other booty, and perhaps ſome few ſold by their own countrymen, in extreme want, or upon a famine, as alſo ſome as a puniſhment of heinous crimes." So far Barbot's account. That given by Boſman is as follows: "When the ſlaves which are brought from the inland countries come to Whidah, they are put in priſon together ; when we treat concerning buying them, they are all brought out together in a large plain, where, by our ſurgeons, they are thoroughly examined, and that naked, both men and women, without the leaſt diſtinction or modeſty. Thoſe which are approved as good, are ſet on one ſide ; in the mean while a burning iron, with the arms or

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[*] *Aſtley*, vol. ii. p. 63.

[†] P. 28.

name of the company, lies in the fire, with which ours are marked on the breaſt. When we have agreed with the owners of the ſlaves, they are returned to their priſons; where, from that time forward, they are kept at our charge, and coſt us two pence a day each ſlave, which ſerves to ſubſiſt them like criminals on bread and water; ſo that to ſave charges, we ſend them on board our ſhips the very firſt opportunity: before which, their maſters ſtrip them of all they have on their backs, ſo that they come on board ſtark naked, as well women as men. In which condition they are obliged to continue, if the maſter of the ſhip is not ſo charitable (which he commonly is) as to beſtow ſomething on them to cover their nakedneſs. Six or ſeven hundred are ſometimes put on board a veſſel, where they lie as cloſe together as it is poſſible for them to be crowded."

When the great income which ariſes to the negro kings on the Slave Coaſt, from the ſlaves brought through their ſeveral governments to be ſhipped on board the European veſſels, is conſidered, we have no cauſe to wonder that they give ſo great a countenance to that trade. Boſman ſays, "That each ſhip which comes to Whidah to trade, reckoning one with another, either by toll, trade, or cuſtom, pays about 400l. and ſometimes 50 ſhips come hither in a year." Barbot confirms the ſame, and adds, "That in the neighbouring kingdom of Ardah, the duty to the king is the value of 70 or 80 ſlaves for each trading ſhip," which is near half as much more as at Whidah. Nor can the Europeans concerned in the trade, with any degree of propriety, blame the African kings for countenancing it, while they continue to ſend veſſels on purpoſe to take in the ſlaves which are thus ſtolen, and that they are permitted, under the ſanction of national laws, to ſell them to the colonies.

According to a late ſenſible writer, Mr Ramſey, "the annual Britiſh exports to theſe coaſts are eſtimated at 500,000l. including a conſiderable quantity that is annually exchanged with American and other foreign traders there; about 50,000l. of this is returned in ivory, gold duſt, gum, &c. The greateſt part of the profits of the ſlave trade is raiſed on the ſugar plantations. If by eſtabliſhing factories, and encouraging civilization on the coaſt of Africa, and returning ſome of our Weſt-Indian ſlaves to their original country, we tried to make up for our paſt treachery to the natives, and inſtructed the inhabitants in the culture of tobacco, indigo, cotton, rice, &c. to barter with us for our manufactures, and ſupply us with thoſe articles, our demand for which has been ſo advantageous to America, great would be our profits. Were Africa civilized. and could we preoccupy the affections of the natives, and introduce gradually our religion, manners, and language among them, we ſhould open a market that would fully employ our manufacturers and ſeamen, morally ſpeaking, till the end of time. And while we enriched ourſelves, we ſhould contribute to their happineſs. For Africa, in its higheſt probable ſtate of culture, could not poſſibly interfere with the ſtaple of Britain, ſo as to hinder an extenſive and mutually advantageous trade from being carried on between the countries. The great difference of climate and ſoil muſt always diſtinguiſh the ſupplies and wants of each."

"The ſlave-trade indeed has been long conſidered as diſgraceful to an enlightened age; and in this country a ſpirit is ariſen which ſeems bent on annihilating it altogether, or ſo changing the nature of it as to blend humanity with policy. During the ſeſſion of 1788, the philanthropy of parliament, ſupported by that of the nation, paid a very particular attention to this odious branch of traffic. It was, however, a ſubject of too comprehenſive a nature, and too materially connected with our African commerce at large and our Weſt-Indian colonies to come to an immediate deciſion upon it. Parliament, therefore, was obliged to content itſelf for that time with a temporary bill to regulate the ſhipping and carrying ſlaves in Britiſh veſſels from thoſe coaſts. But the public attention has been ſince kept awake by a great variety of publications on both ſides of the queſtion; and the final arrangement of this important buſineſs, in which the honour of the Britiſh commerce and the Britiſh character, as well as the happineſs of millions of our ſable African brethren, is involved, is expected to take place during the preſent ſeſſion 1791.—This traffic in human beings is not, however, without its advocates. But the moſt ſpecious arguments of its ableſt defenders reach no farther than political expediency, which can never alter the real nature of things. That in queſtion would not remain leſs an unjuſt, cruel, and wicked trade, in its very nature eſſentially and unalterably wrong. Its abolition, therefore, not in a raſh, but in as gentle and equitable a way as circumſtances will allow, is devoutly to be wiſhed, and it is hoped may be accompliſhed."

New Guinea, a long and narrow iſland of the Eaſt-Indies, very imperfectly known. It was ſuppoſed to be connected with New-Holland, until Captain Cook diſcovered the ſtrait which ſeparates them. New-Guinea, including Papua, its north-weſtern part (which according to Bougainville's conjecture is ſeparated from it by a ſtrait), reaches from the equator to the 12th degree of ſouth latitude, and from 131 to 150 degrees eaſt longitude; in one part it does not appear to be above 50 miles broad. It was firſt viſited by an European ſhip in 1529. Saavedra, a Portugueſe, who made the diſcovery of the north-weſt part of this country, called it *Terra de Papuas* or *Papos*. Van Schouten a Dutch diſcoverer, afterwards gave the name of *New-Guinea* to its ſouth-weſtern parts. Admiral Roggewain alſo touched here; and before him Dampier, 1ſt January 1700. Captain Cook made the coaſt of New-Guinea, in latitude 6 degrees 15 minutes, longitude 138 eaſt, on the 3d of September, and landed in the pinnace, accompanied by Mr. Banks, Doctor Solander, nine of the ſhip's crew, and ſervants well armed, and leaving two ſeamen to take care of the boat, advanced ſome little way up the country; but coming to the ſkirts of a thick wood, they judged it prudent to proceed no further, leaſt they ſhould fall into an ambuſcade of the natives, and their retreat to the boat be cut off. Having advanced about a quarter of a mile from the boat, three Indians ruſhed out of the wood with a hidious ſhout; they drew their darts, and ſhowed ſuch a hoſtile diſpoſition, that the party, to prevent the deſtruction of theſe people, returned to the boat, as they had no intention forcibly to invade their country, either to gratify their appetites or curioſity, and it was evident nothing could be done upon friendly terms. When they got on board the boat, they rowed along the ſhore, and the number of Indians aſſembled ſeemed to be between 60 and 100. They made much the ſame appearance as the New-Hollanders, being ſtark naked and their hair cropped ſhort. All the while they were ſhouting defiance, and throwing ſomething out of their hand which burnt exactly like gun-powder, but made no report; what theſe fires were, or for what purpoſe intended, could not be gueſſed at; thoſe who diſcharged them had in their hands a ſhort piece of ſtick, poſſibly a hollow cane, which they ſwung ſidewiſe from them, and immediately fire and ſmoke iſſued, exactly reſembling the diſcharge of a muſket, and of no longer duration. This wonderful phænomenon was obſerved from the ſhip; and the deception was ſo great, that the people on board thought they had fire-arms; and even in the boat if they had not been ſo near as that they muſt have heard the report, if there had been any, they would have thought they had been firing volleys. After looking at them attentively for ſome time, without taking any notice of their flaſhing and vociferation, the ſailors fired ſome muſkets over their heads. Upon hearing the balls rattle among the trees, they walked leiſurely away, and the boat returned to the ſhip. Upon examining ſome weapons which the natives had thrown, they were found to be light darts, about four feet long, very ill made, of a reed or bamboo cane, and pointed with hard wood, in which there were many barbs. They were diſcharged with great force, for at 60 yards diſtance they went beyond the party; but in what manner they were thrown could not be exactly ſeen. But the general opinion was, that they were thrown with a ſtick in the manner practiſed by the New-Hollanders.

The land here is very low, as is every other part of the coaſt; but it is covered with a luxuriance of wood and herbage that can ſcarcely be conceived. Here the cocoa-nut, plantain, and bread-fruit, flouriſh in the higheſt perfection.

Guinea, a gold coin, ſtruck and current in Britain. The value or rate of guineas has varied: it was firſt ſtruck on the footing of 20s. by the ſcarcity of gold was afterwards advanced to 21s. 6d. but it is now ſunk to 21s.

The pound weight troy of gold is cut into 44 parts and a half; each part makes a guinea.—This coin took its denomination *guinea*, becauſe the gold, whereof the firſt was ſtruck, was brought from that part of Africa called *Guinea*; for which reaſon it likewiſe bore the impreſſion of an elephant.

Guinea-Company. See Company (African.)

Guinea-Hen, in ornithology. See Numida.

Guinea-Pig, in zoology. See Mus.

Guinea-Wheat. See Zea.

GUIPUSCOA, the north-eaſt diviſion of the province of Biſcay in Spain, ſituated on the confines of Navarre.

GUISE, a ſmall town of France in Picardy, and in Tierache, with a very ſtrong caſtle, and the title of a duchy. It is ſeated on the river Ouſe, in E. Long. 3. 42. N. Lat. 49. 54.

Guise (Henry) of Lorrain, duke of Guiſe (eldeſt ſon of Francis of Lorrain duke of Guiſe), memorable in the hiſtory of France as a gallant officer; but an imperious, turbulent, ſeditious ſubject, who placed himſelf at the head of an armed force, and called his rebel band, *The League*. The plan was formed by the cardinal, his younger brother; and under the pretext of defending the Roman Catholic religion, the king Henry III. and the freedom of the ſtate, againſt the deſign of the Hugenots, or French Proteſtants, they carried on a civil war, maſſacred the Hugenots, and governed the king, who forbid his appearance at Paris; but Guiſe now became an open rebel, entered the city againſt the king's expreſs order, and put to the ſword all who oppoſed him; the ſtreets being barricaded to prevent his progreſs, this fatal day is called in the French hiſtory, *The day of the barricades*. Maſters of Paris, the policy of the Guiſes failed them: for they ſuffered the king to eſcape to Blois, though he was deſerted in his palace at Paris by his very guards. At Blois, Henry convened an aſſembly of the ſtates of France; the duke of Guiſe had the boldneſs to appear to a ſummons ſent to him for that purpoſe; a forced reconciliation took place between him and the king, by the advice of this aſſembly; but it being accidentally diſcovered, that Guiſe had formed a deſign to dethrone the king, that weak monarch, inſtead of reſolutely bringing him to juſtice, had him privately aſſaſſinated, December 23, 1558, in the 38th year of his age. His brother the cardinal ſhared the ſame fate the next day.

GUITTAR, Guitarra, a muſical inſtrument of the ſtringed kind, with five double rows of ſtrings; of which thoſe that are braſs are in the middle, except it be for the burden, an octave lower than the fourth. ——This inſtrument was firſt uſed in Spain and by the Italians. In the former country it is ſtill greatly in vogue. There are few of that nation who cannot play on the guittar; and with this inſtrument they ſerenade their miſtreſſes at night. At Madrid, and other cities in that country, it is common to meet in the ſtreets young men equipped with a guittar and a dark lanthorn, who, taking their ſtation under the windows, ſing, and accompany their voices with this inſtrument; and there is ſcarce an artificer or day-labourer in any of the cities or principal towns who does not entertain himſelf with his guittar.

GULDENSTAEDT (John Anthony), was born at Riga, April 26, 1745; received the rudiments of his education in that town; and in 1763 was admitted into the medical college of Berlin. He completed his ſtudies at Frankfort upon the Oder, and in 1767 received the degree of M. D. in that univerſity. On account of his knowledge of foreign languages, and the conſiderable progreſs he had made in natural hiſtory, he was conſidered as a fit perſon to engage in the expeditions which were planned by the imperial academy. Being invited to St Peterſburg, he arrived in that city in 1768, was created adjunct of the academy, and afterwards, in 1770, member of that ſociety, and profeſſor of natural hiſtory. In June 1761 he ſet out upon his travels, and was abſent ſeven years. From Moſcow, where he continued till March 1769, he paſſed to Voronetz, Tzaritzin, Aſtracan, and Kiſlar, a fortreſs upon the weſtern ſhore of the Caſpian, and cloſe to the confines of Perſia. In 1770 he examined the diſtricts watered by the river Terek, Sunſha, and Alkſai, in the eaſtern extremity of Caucaſus; and in the courſe of the enſuing year penetrated into Oſſetia, in the higheſt part of the ſame mountain; where he collected vocabularies of the languages ſpoken in thoſe regions, made inquiries into the hiſtory of the people, and diſcovered ſome traces of Chriſtianity among them. Having viſited Cabarda and the northern chain of the Caucaſus, he proceeded to Georgia, and was admitted to an audience of prince Heraclius, who was encamped about ten miles from Teflis. Having paſſed the winter here, and in examining the adjacent country, he followed in ſpring the prince to the province of Ketia, and explored the ſouthern diſtricts inhabited by the Turcoman Tartars in the company of a Georgian magnate, whom he had cured of a dangerous diſorder. In July he paſſed into Imeretia, a country which lies between the Caſpian and Black Seas, and is bounded on the eaſt by Georgia, on the north by Oſſetia, on the weſt by Mingrelia, and on the ſouth by the Turkiſh dominions. He penetrated into the middle chain of Mount Caucaſus, viſited the confines of Mingrelia, Middle Georgia, and Eaſtern and Lower Imeretia; and after eſcaping many eminent dangers from the banditti of thoſe parts, fortunately returned to Kiſlar on the 18th of November, where he paſſed the winter, collecting various information concerning the neighbouring Tartar tribes of Caucaſus, and particularly the Leſgees. In the following ſummer he journeyed to Cabarda Major, continued his courſe to mount Beſhton, the higheſt point of the firſt ridge of the Caucaſus; inſpected the mines of Madſhar, and went to Tcherkaſh upon the Don. From thence he made expeditions to Azof and Taganrog, and then, along the new limits to the Dnieper, he finiſhed this year's route at Krementſhuk, in the government of New Ruſſia. In the enſuing ſpring, he was proceeding to Crim Tartary; but receiving an order of recal, he returned through the Ukraine to Moſcow and St Peterſburg, where he arrived in the month of March 1775. Upon his return, he was employed in arranging his papers; but before he could finiſh them for the preſs, was ſeized with a violent fever, which carried him to the grave in March 1781. His writings which have been hitherto publiſhed conſiſt of a number of curious treatiſes, of which a liſt is given in Cox's Travels, Vol. I. p. 162.

GULA, in anatomy, the œſophagus or gullet, that conduit by which animals take down food into the ſtomach. See Anatomy, nº 92.

GULE *of* August, the day of St Peter *ad vincula*, which is celebrated on the firſt of Auguſt. It is called the *gule of Auguſt*, from the Latin *gula*, "a throat," for this reaſon, that one Quirinus, a tribune, having a daughter that had a diſeaſe in her throat, went to Pope Alexander, the ſixth from St Peter, and deſired of him to ſee the chains, that St Peter was chained with under Nero; which requeſt being granted, and ſhe, kiſſing the chains, was cured of her diſeaſe; whereupon the Pope inſtituted this feaſt in honour of St Peter; and, as before, this day was termed only the kalends of Auguſt, it was on this occaſion called indifferently either the day of St Peter *ad vincula*, from what wrought the miracle, or the *gule of Auguſt*, from that part of the virgin whereon it was wrought.

GULES, in heraldry, a corruption of the French word *geules*, which in this ſcience ſignifies "red," and is repreſented in engraving by perpendicular lines. It may ſerve of itſelf to denote martial prowеſs, boldneſs, and hardineſs: for the ancients uſed this colour to make themſelves terrible to their enemies, to ſtir up magnanimity, and to prevent the ſeeing of blood, by the likeneſs of the colours; for which reaſon perhaps it is uſed by the Engliſh. But, according to G. Leigh, if this tincture is compounded with

Or.	it ſignifies	Deſire.
Arg.		Envy.
Azu.		Ardour.
Ver.		Strength.
Pur.		Juſtice.
Sab.		Wearineſs.

This colour is by the generality of the Engliſh heralds ranked before azure; but French heralds, N. Upton and his followers, prefer azure to it.

GULL, in ichthyology. See Larus.

GULF, a broad and capacious bay comprehended between two promontories, and ſometimes taking the name of a *ſea* when it is very extenſive; but particularly when it only communicates with the ſea by means of a ſtrait. Such are the Euxine or Black ſea, otherwiſe called *the Gulf of Conſtantinople*; the Adriatic Sea, called alſo the *Gulf of Venice*; the gulf of Sidra near Barbary; and the gulph of Lions near France. All theſe gulfs are in the Mediterranean. There are, beſides the gulf of Mexico, the gulf of St Lawrence, and the gulf of California, which are in North-America. There are alſo the gulf of Perſia, otherwiſe called *the Red Sea*, between Perſia and Arabia; the gulf of Bengal in India; and the gulfs of Cochinchina and Kamtſchatka, near the countries of the ſame name.

The word comes from the French *golfe*, and that from the Italian *golfo*, which ſignify the ſame. Some deduce theſe further from the Greek γολπος; which Guiſhart again derives from the Hebrew גאב *gob*. Du Cange derives them from the barbarous Latin *gulfum*, or *gulfus*, which ſignify the ſame thing.

GULLET. See Gula.

GUM (*Gummi*), is a concrete vegetable juice, of no particular ſmell or taſte, becoming viſcous and tenacious when moiſtened with water; totally diſſolving in water into a liquid, more or leſs glutinous in proportion to the quantity of the gum; not diſſolving in vinous ſpirits or in oils; burning in the fire to a black coal, without melting or catching flame; ſuffering no diſſipation in the heat of boiling water.

The true gums are gum arabic, gum tragacanth, gum ſenega, the gum of cherry and plum trees, and ſuch like. All elſe have more or leſs of reſin in them.

Gum-Arabic is the produce of a ſpecies of Mimosa; which ſee.

The medical character of gum arabic is its glutinous quality, in conſequence of which it ſerves to incraſſate and obtund thin acrid humours, ſo proves uſeful in tickling coughs, alvine fluxes, hoarſeneſſes, in fluxes of the belly with gripes, and where the mucus is abraded from the bowels or from the urethra. In a dyſuria the true gum arabic is more cooling than the other ſimple gums, ſo ſhould be preferred.

One ounce of gum arabic renders a pint of water conſiderably glutinous: four ounces gives it a thick ſyrupy conſiſtence: but for mucilage, one part gum to two parts water is required; and for ſome purpoſes an equal proportion will be neceſſary.

Vol. i. p. 319, &c.

In Dr. Percival's Eſſays we have the following curious account, by Mr Henry, of the faculty which this gum hath of diſſolving and keeping ſuſpended in water not only reſinous but alſo other ſubſtances, which ſhould ſeem not likely to be at all affected by it.

"One ſcruple of balſam of tolu, rubbed with half an ounce of diſtilled rain-water, added gradually to it for 15 minutes, formed a mixture, which on ſtanding about a minute ſubſided, but re-united by ſhaking: being ſet by a few days, the balſam became a concrete maſs, not again miſcible by ſhaking up the bottle. The ſame quantity required more trituration to mix it with common pump-water. One ſcruple of the ſame, rubbed with 15 grains of gum arabic, was nearly as long in perfectly uniting with half an ounce of diſtilled water as that without the gum. This was perhaps owing to the latter piece being more reſinous; however, though on long ſtanding there was a ſmall ſediment, it immediately reunited a week after by agitation. Fifteen grains of balſam capivi united very ſmoothly with half an ounce of diſtilled water, by the medium of three grains of gum arabic. Five grains of the gum were not ſo effectual with pump-water. Balſam Peru ten drops, with gum arabic three grains, diſtilled water half an ounce, formed a neat white emulſion, but with common water a very unequal mixture. Gum myrrh (powdered that there might be no difference in the ſeveral quantities uſed), half a ſcruple, diſſolved readily with gum arabic three grains, in both kinds of water, and even mixed with them by longer trituration without any medium, but more eaſily with diſtilled than common ſpring water. Olibanum, maſtich, gum guaiacum, and galbanum, may likewiſe be mixed with water by rubbing, without any gum arabic or egg. The ſpring water made uſe of in theſe experiments was very aluminous.

"In the making of all the ſaline preparations, when any conſiderable quantities of water are uſed, diſtilled or pure rain or river water is greatly to be preferred; for the calcareous, aluminous, and ſelenitical matter, which ſo much abounds in moſt ſpring water, will render any ſalt diſſolved in it very impure.

"The ſolution of crude mercury with mucilage of gum arabic being ſo eaſily accompliſhed, and it being very diſagreeable to many patients, and to ſome almoſt impoſſible, to ſwallow pills, boluſes, or electuaries, I was induced to try whether calomel, cinnabar, and the other heavy and metalline bodies commonly adminiſtered only under theſe forms, might not by the ſame means be rendered miſcible with water, ſo as to be given more agreeably in a liquid form. I acccordingly rubbed ten grains of cinnabar of antimony and a ſcruple of gum arabic, with a ſufficient quantity of diſtilled water to form a mucilage, and added a drachm of ſimple ſyrup and three drachms more of water. This makes an agreeable little draught; and having ſtood about half an hour without depoſiting any ſediment, I added three drachms more of water to it; and notwithſtanding the mucilage was rendered ſo much more dilute, very little of the cinnabar ſubſided even after it had ſtood ſome days.

Steel ſimply prepared, and prepared tin, were both mixed with water by their own weight of gum arabic, and remained ſuſpended, except a very ſmall portion of each, which was not reduced to a ſufficiently fine powder.

"Five grains of calomel were mixed with two drachms of diſtilled water and half a drachm of ſimple ſyrup by means of five grains of gum arabic, which kept it ſufficiently ſuſpended: a double quantity of the gum preſerved the mixture uniform ſtill longer. In this form it will be much more eaſily given to children than in ſyrups, conſerves, &c. as a great part of it is generally waſted, in forcing thoſe viſcid vehicles into them; and it may be joined with ſcammony and other reſinous purgatives by the ſame method, and of theſe perhaps the gum arabic would be the beſt corrector.

"Gum arabic likewiſe greatly abates the diſagreeable taſte of the corroſive ſublimate, mixed with water inſtead of brandy; and (from the few trials I have made) ſits eaſier on the ſtomach, and will not be ſo apt to betray the patient by the ſmell of the brandy.

"Mr Plenck, who firſt inſtructed us in the method of mixing quickſilver with mucilage, obſerves (and experience confirms the truth of it), that this preparation is not ſo apt to bring on a ſpitting as the *argent. viz.* mixed by any other medium, or as the ſaline and other mercurial preparations.—How far the theory by which he accounts for it may be juſt is not of much importance; but it may perhaps be worth while to inquire, whether it would not be equally effectual in preventing calomel, and the other preparations of mercury, from affecting the mouth.—If ſo, is it not improper, where a ſalivation is intended, to give emulſions with gum arabic and other mucilaginous liquors for the patient's common drink, as by that means the ſpitting may be retarded? And, on the contrary, may it not be a uſeful medicine to diminiſh the diſcharge when too copious?

"The following caſe may in ſome meaſure ſerve to confirm the above obſervation.—A gentleman, always eaſily affected by mercurials, having taken about 26 grains of calomel in doſes from 1 to 3 grains, notwithſtanding he was purged every third day, was ſuddenly ſeized with a ſalivation. He ſpat plentifully, his breath was very fetid, teeth looſe, and his gums, fauces, and the margin of his tongue, greatly ulcerated and inflamed. He was directed to uſe the following gargle. ℞. *Gum. arb. ſemiunc. ſolve in aquæ font. bullient. ſelib. & adde mel. roſac. unc. unam. M. ft. gargar.* And to drink freely of a ptiſan prepared with *aq. hord. lib. ij. gum. arabic unc. ij. nitr. pur. drachm. ij. ſacchar. alb. unc. j.* His purgative was repeated the ſucceeding morning. The next day his gums were leſs inflamed, but the ſloughs on his tongue, &c. were ſtill as foul: his ſpitting was much the ſame: he had drank about a pint of the ptiſan. Some *ſpt. vitrioli* was added to the gargle. From this day to the fourth he was purged every day without effect, his ſalivation ſtill continued, his mouth was no better, he had neglected the mucilaginous drink. This evening he was perſuaded to drink about a pint of it which remained, and he had it repeated, and drank very freely of it that night. On the fifth morning the purgative was again repeated. Though it operated very little, yet the change was very ſurpriſing: his mouth was nearly well, and his ptyaliſm greatly decreaſed. The ptiſan was repeated;

and on the ſixth day, being quite well, he was permitted to go abroad."

In Mr Haſſelquiſt's Travels we have an inſtance of the extraordinary nutritive virtues of this gum. "The Abyſſinians (ſays he) make a journey every year to Cairo, to ſell the products of their country. They muſt travel over terrible deſarts, and their journey depends as much on the weather as a voyage at ſea: conſequently they know as little as a ſeaman how long they muſt be on their journey; and the neceſſaries of life may chance to fail them when the journey laſts too long. This happened to the Abyſſinian caravan in the year 1740, their proviſions being conſumed when they had ſtill two months to travel. They were then obliged to ſearch for ſomething among their merchandiſe wherewith they might ſupport nature; and found nothing more proper than gum arabic, of which they had carried a conſiderable quantity along with them. This ſerved to ſupport above 1000 perſons for two months; and the caravan at laſt arrived at Cairo without any great loſs of people either by hunger or diſeaſes.

Gum Seneca, is a gum extremely reſembling gum arabic. It is brought to us from the country through which the river Senega runs, in looſe or ſingle drops: but theſe are much larger than thoſe of the gum arabic uſually are; ſometimes it is of the bigneſs of an egg, and ſometimes much larger: the ſurface is very round or wrinkled, and appears much leſs bright than the inner ſubſtance where the maſſes are broken. It has no ſmell, and ſcarce any taſte. It is probably produced from a tree of the ſame kind with the former. The virtues of it are the ſame with the gum arabic; but it is rarely uſed in medicine, unleſs as mixed with the gum arabic: the dyers and other artificers conſume the great quantities of it that are annually imported hither. The negroes diſſolve it in milk, and in that ſtate make it a principal ingredient in many of their diſhes, and often feed on it thus alone.

Gum Tragacanth, the gum of the tragacanth, a thorny buſh growing in Crete, Aſia, and Greece. See ASTRAGALUS.

Other ſubſtances known by the name of *gums* are as follow:

Gum Ammoniac. See AMMONIAC.
Gum Elemi. See AMYRIS.
Gum Keno See KENO.
Gum Guaiacum. See GUAIACUM.
Gum Lacca. See COCCUS and LACCA.

GUM, among gardeners, a kind of gangrene incident to fruit-trees of the ſtone kind, ariſing from a corruption of the ſap, which, by its viſcidity, not being able to make its way through the fibres of the tree, is, by the protruſion of other juice, made to extravaſate and ooze out upon the bark.

When the diſtemper ſurrounds the branch, it admits of no remedy; but when only on one part of a bough, it ſhould be taken off to the quick, and ſome cow-dung clapped on the wound, covered over with a linen cloth, and tied down. M. Quintinie directs to cut off the morbid branch two or three inches below the part affected.

GUMMA, a ſort of venereal excreſcence on the perioſteum of the bones.

GUMS, in anatomy, the hard fleſhy ſubſtance in either jaw, through which the teeth ſpring from the jawbone. See ANATOMY, nº 102.

The gums are apt to become ſpongy, and to ſeparate from the teeth; but the cauſe is frequently a ſtony kind of cruſt, which forms itſelf therein, which when ſeparated, the gums ſoon return to their former ſtate, eſpecially if rubbed with a mixture of the infuſion of roſes four parts, and the tincture of myrrh one part.—The ſcurvy is another diſorder, which affects the gums. This diſorder, when not manifeſt in any other part, ſometimes appears in this: indeed, when a ſcorbutic diſorder invades the whole habit its firſt ſymptom is a putrid ſtate of the gums.

GUN, in the military art, a fire-arm, or weapon of offence, which forcibly diſcharges a ball or other hard and ſolid matter through a cylindric tube, by means of inflamed gun-powder. See *GUN-POWDER*.

The word gun now includes moſt of the ſpecies of fire-arms; piſtols and mortars being almoſt the only ones excepted from this denomination. They are divided into great and ſmall guns: the former including all that we alſo call cannon, ordnance, or artillery; the latter includes muſquets, carabines, muſquetoons, blunderbuſſes, fowling-pieces, &c.

It is not known at what time theſe weapons were firſt invented. Though, comparatively ſpeaking, the introduction of guns into the weſtern part of the world is but of a modern date; yet it is certain that in ſome parts of Aſia they have been uſed, though in a very rude and imperfect manner, for many ages.—Philoſtratus ſpeaks of a city near the river Ayphaſis in the Indies, which was ſaid to be impregnable, and that its inhabitants were relations of the gods, becauſe they threw thunder and lightning upon their enemies. Hence ſome imagine that guns were uſed by the eaſtern nations even in the time of Alexander the Great; but however this may be, many of our modern travellers aſſert that they were uſed in China as far back as the year of Chriſt 85, and have continued in uſe ever ſince.

The firſt hint of the invention of guns in Europe is in the works of Roger Bacon, who flouriſhed in the 13th century. In a treatiſe written by him about the year 1280, he propoſes to apply the violent exploſive force of gun-powder for the deſtruction of armies. In 1320, Bartholomew Schwartz, a German monk, is commonly ſaid to have invented gun-powder, though it is certainly known that this compoſition is deſcribed by Bacon in ſome of his treatiſes long before the time of Schwartz. The following is ſaid to have been the manner in which Schwartz invented gun-powder. Having pounded the materials for it in a mortar, which he afterwards covered with a ſtone, a ſpark of fire accidentally fell into the mortar and ſet the mixture on fire; upon which the exploſion blew the ſtone to a conſiderable diſtance. Hence it is probable that Schwartz might be taught the ſimpleſt method of applying it in war; for Bacon ſeems rather to have conceived the manner of uſing it to be by the violent effort of the flame unconfined, and which is indeed capable of producing aſtoniſhing effects*. The figure and name of *mortars* given to a ſpecies of old artillery, and their employment (which was throwing great ſtone-bullets at an elevation), very much corroborates this conjecture.

Soon after the time of Schwartz, we find guns commonly made uſe of as inſtruments of war. Great guns were firſt uſed. They were originally made of iron bars ſoldered together, and fortified with ſtrong iron-hoops; ſome of which are ſtill to be ſeen, *viz.* one in the Tower of London, two at Woolwich, and one in the royal arſenal at Liſbon. Others were made of thin ſheets of iron rolled up together and hooped; and on emergencies they were made of leather, with plates of iron or copper. Theſe pieces were made in a rude and imperfect manner, like the firſt eſſays of many new inventions. Stone-balls were thrown out of them, and a ſmall quantity of powder uſed on account of their weakneſs. Theſe pieces had no ornaments, were placed on their carriages by rings, and were of a cylindrical form. When or by whom they were made is uncertain; the Venetians, however, uſed cannon at the ſiege of Claudia Jeſſa, now called *Chioggia*, in 1366, which were brought thither by two Germans, with ſome powder and leaden balls; as likewiſe in the wars with the Genoeſe in 1379. King Edward III. made uſe of cannon at the battle of Creſſy in 1346, and at the ſiege of Calais in 1347. Cannon were made uſe of by the Turks at the ſiege of Conſtantinople, then in poſſeſſion of the Chriſtians, in 1394, and in that of 1452, that threw a weight of 100 lb. but they generally burſt either the firſt, ſecond, or third ſhot. Louis XII. had one caſt at Tours, of the ſame ſize, which threw a ball from the Baſtile to Charenton. One of thoſe famous cannon was taken at the ſiege of Dieu in 1546, by Don John de Caſtro; and is in the caſtle of St Juliao da Barra, 10 miles from Liſbon: its length is 20 feet 7 inches, diameter at the centre 6 feet 3 inches, and it diſcharges a ball of 100lb. It has neither dolphins, rings, nor button; is of a curious kind of metal; and has a large Indoſtan inſcription upon it, which ſays it was caſt in 1400.

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* See *Gun-powder.*

Formerly the cannon were dignified with uncommon names; for, in 1503, Louis XII. had 12 braſs cannon caſt, of an extraordinary ſize, called after the names of the 12 peers of France. The Spaniſh and Portugueſe called them after their ſaints. The emperor Charles V. when he marched before Tunis, founded the 12 apoſtles. At Milan there is a 70 pounder, called the *Pimontelle*; and one at Bois-le-duc, called the *Devil*. A 60 pounder at Dover caſtle, called *Queen Elizabeth's pocket-piſtol*. An 80 pounder in the tower of London (formerly in Edinburgh-caſtle), called *Mounts-meg*. An 80 pounder in the royal arſenal at Berlin, called the *Thunderer*. An 80 pounder at Malago, called the *Terrible*. Two curious 60 pounders in the arſenal at Bremen, called the *Meſſengers of bad news*. And, laſtly, an uncommon 70 pounder in the caſtle of St Angelo at Rome, made of the nails, that faſtened the copper-plates which covered the ancient Pantheon, with this inſcription upon it: *Ex clavis trabalibus porticus Agrippæ.*

In the beginning of the 15th century theſe uncommon names were generally aboliſhed, and the following more univerſal ones took place, *viz.*

		Pounders.	Cwt.
Cannon royal, or carthoun		=48	about 90
Baſtard cannon, or ¾ carthoun		=36	79
½ Carthoun		=24	60
Whole culverins		=18	50
Demi culverins		=9	30
Falcon		=6	25
Sacker	loweſt ſort	=5	13
	ordinary	=6	15
	largeſt ſize	=8	18
Baſiliſk		=48	85
Serpentine		=4	8
Aſpic		=2	7
Dragon		=6	12
Syren		=60	81
Falconet		=3, 2, & 1	15, 10, 5.

Moyens, which carried a ball of 10 or 20 ounces, &c. Robinet, which carried a ball of 16 ounces.

Theſe curious names of beaſts and birds of prey were adopted on account of their ſwiftneſs in motion or of their cruelty, as the falconet, falcon, ſacker, and culverin, &c. for the ſwiftneſs in flying; the baſiliſk, ſerpentine, aſpike, dragon, ſyren, &c. for their cruelty.

At preſent cannon take their names from the weight of the ball they diſcharge. Thus a piece that diſcharges a ball of 24 pounds, is called a 24 *pounder*; one that carries a ball of 12 pounds, is called a 12 *pounder*; and ſo of the reſt, divided into the following ſorts, *viz.*

Ship-guns, conſiſting in 42, 36, 32, 24, 18, 12, 9, 6, and 3 pounders.

Garriſon-guns, in 42, 32, 24, 18, 12, 9, and 6 pounders.

Battering-guns, in 24, 18, and 12 pounders.

Field-pieces, in 12, 9, 6, 3, 2, 1½, 1, and ½ pounders.

Mortars are thought to have been fully as ancient as cannon. They were employed in the wars of Italy, to throw balls of red-hot iron, ſtones, &c. long before the invention of ſhells. Theſe laſt are thought to be of German invention, and the uſe of them in war to have been taught by the following accident. A citizen of Venlo, at a certain feſtival celebrated in honour of the duke of Cleves, threw a number of ſhells, one of which fell on a houſe and ſet fire to it, by which misfortune the greateſt part of the town was reduced to aſhes. The firſt account of ſhells uſed for military purpoſes is in 1435, when Naples was beſieged by Charles VIII. Hiſtory informs us with more certainty, that ſhells were thrown out of mortars at the ſiege of Wachtendonk, in Guelderland, in 1588, by the earl of Mansfield. Mr Maltar, an Engliſh engineer, firſt taught the French the art of throwing ſhells, which they practiſed at the ſiege of Motte in 1634. The method of throwing red-hot balls out of the mortars was firſt certainly put in practice at the ſiege of Stralſund in 1675 by the elector of Brandenburgh; though ſome ſay in 1653 at the ſiege of Bremen. For the proper dimenſions of guns, their weight, the metal of which they are formed, &c. ſee the article Gunnery.

Muſkets were firſt uſed at the ſiege of Rhege in the year 1521. The Spaniards were the firſt who armed part of their foot with theſe weapons. At firſt they were very heavy, and could not be uſed without a reſt. They had match-locks, and did execution at a great diſtance. On their march the ſoldiers carried only the reſts and ammunition, and had boys to bear their muſkets after them. They were very ſlow in loading, not only by reaſon of the unwieldineſs of their pieces,

Gundelia,
Gunellus.

and becauſe they carried the powder and ball ſeparate, but from the time it took to prepare and adjuſt the match; ſo that their fire was not near ſo briſk as ours is now. Afterwards a lighter matchlock muſket came in uſe; and they carried their ammunition in bandeliers, to which were hung ſeveral little caſes of wood covered with leather, each containing a charge of powder. The balls were carried looſe in a pouch, and a priming-horn hanging by their ſide. The muſkets with reſts were uſed as late as the beginning of the civil wars in the time of Charles I. The lighter kind ſucceeded them, and continued till the beginning of the preſent century, when they alſo were diſſuſed, and the troops throughout Europe armed with firelocks.

GUNDELIA, in botany: A genus of the polygamia ſegregatæ order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order, *Compoſitæ*. There is ſcarce any calyx, but quinqueflorous, with tubular hermaphrodite florets, the receptacle briſtly, with ſcarce any pappus.

GUNELLUS, in itchthyology. See BLENNIUS.

Gunner,
Gunnera.

GUNNER, an officer appointed for the ſervice of the cannon, or one ſkilled to fire the guns.

In the Tower of London, and other garriſons, as well as in the field, this officer carries a field ſtaff, and a large powder-horn in a ſtring over his left ſhoulder: he marches by the guns; and when there is any apprehenſion of danger, his field ſtaff is armed with match. His buſineſs is to lay the gun to paſs, and to help to load and traverſe her.

Maſter GUNNER, a patent-officer of the ordnance, who is appointed to teach all ſuch as learn the art of gunnery, and to certiſy to the maſter-general the ability of any perſon recommended to be one of the king's gunners. To every ſcholar he adminiſters an oath not to ſerve, without leave, any other prince or ſtate; or teach any one the art of gunnery but ſuch as have taken the ſaid oath.

GUNNERA, in botany; a genus of the diandria order, belonging to the gynandria claſs of plants. The amentum conſiſts of uniflorous ſcales there is neither calyx nor corolla; the germen is bidented, with two ſtyles and one ſeed.

GUNNERY,

IS the art of charging, directing, and exploding fire-arms, as cannons, mortars, muſkets, &c. to the beſt advantage.—As this art depends greatly on having the guns and ſhot of a proper ſize and figure, and well adapted to each other, it hence follows that the proper dimenſions, &c. of cannons and ſmall arms come properly to be conſidered under the preſent article.

SECT. I. *Hiſtory of Gunnery.*

1
History.

THE ancients, who knew not the uſe of gunpowder and fire-arms, had notwithſtanding machines which were capable of diſcharging ſtones, darts, and arrows, with great force. Theſe were actuated chiefly by the elaſtic force of ropes, or of ſtrong ſprings, and required a great number of men to work them; for which reaſon, the exploſion of gunpowder, as acting inſtantaneouſly, and ſeemingly with irreſiſtible force, ſeemed to be a moſt proper ſuccedaneum for all the powers by which the military engines in former times were actuated. It ſoon appeared, however, that this force was not very eaſily applied. Though the experiment of Bartholomew Schwartz, mentioned under the article GUN, had given a good hint towards this application in a ſucceſsful manner, yet the violent reaction of the inflamed powder on the containing veſſels rendered them very apt to burſt, to the great danger of thoſe who ſtood near them. The gunpowder in thoſe days, therefore was much weaker than it is now made, though this proved a very inſufficient remedy for the inconvenience abovementioned. It was alſo ſoon diſcovered, that iron bullets of much leſs weight than ſtone ones would be more efficacious if impelled by greater quantities of ſtronger powder. This occaſioned an alteration in the matter and form of the cannon, which were now caſt of braſs. Theſe were lighter and more manageable than the former, at the ſame time that they were ſtronger in proportion to their bore. Thus they were capable of enduring greater charges of a better powder than what had been formerly uſed; and their iron-bullets (which were from 40 or 60 pounds weight), being impelled with greater velocities were more effectual than the heavieſt ſtones could ever prove. This change took place about the latter end of the 15th century.

By this means powder compounded in the manner now practiſed over all Europe came firſt in uſe. But the change of the proportion of materials was not the only improvement it received. The method of graining it is undoubtedly a conſiderable advantage. At firſt the powder was always in the form of fine meal, ſuch as it was reduced to by grinding the materials together. It is doubtful whether the firſt graining of powder was intended to increaſe its ſtrength, or only to render it more convenient for filling into ſmall charges and the charging of ſmall arms, to which alone it was applied for many years, whilſt meal-powder was ſtill made uſe for cannon. But at laſt the additional ſtrength which the grained powder was found to acquire from the free paſſage of the air between the grains, occaſioned the meal powder to be entirely laid aſide.

For the laſt two hundred years, the formation of cannon hath been very little improved: the beſt pieces of modern artillery differing little in their proportions from thoſe uſed in the time of Charles V. Indeed lighter and ſhorter pieces have been often propoſed and eſſayed; but though they have their advantages in particular caſes, yet it ſeems now to be agreed that they are altogether inſufficient for general ſervice. But though the proportions of the pieces have not been much varied within that period, yet their uſe and application have undergone conſiderable alterations; the ſame ends being now accompliſhed by ſmaller pieces than what were formerly thought neceſſary. Thus the battering cannon now univerſally approved of are thoſe formerly called *demi-cannons*, carrying a ball of 24 pounds weight; it being found by experience, that their ſtroke, though leſs violent than that of larger pieces, is yet ſufficiently adapted to the ſtrength of the uſual profiles of fortification; and that the facility of their carriage and management, and the ammunition they ſpare, give them great advantages beyond the whole cannons formerly employed in making breaches. The method alſo of making a breach, by firſt cutting off the whole wall as low as poſſible before its upper part is attempted to be beat down, ſeems alſo to be a conſiderbale modern improvement in the practical part of gunnery. But the moſt conſiderable improvement in the practice is the method of firing with ſmall quantities of powder; and elevating the piece ſo that the bullet may juſt go clear of the parapet of the enemy, and drop into their works. By this means the bullet, coming to the ground at a ſmall angle, and with a ſmall velocity, does not bury itſelf, but bounds or rolls along in the direction in which it was fired: and therefore, if the piece be placed in the line with the battery it is intended to ſilence, or the front it is to ſweep, each ſhot rakes the whole length of that battery or front; and has thereby a much greater chance of diſabling the defendants, and diſmounting their cannon, than it would have if fired in the common manner. This method was invented by Vauban, and was by him ſtyled *Batterie á Ricochet*. It was firſt put in practice in the year 1692 at the ſiege of Aeth.—Something ſimilar to this was put in practice by the king of Pruſſia at the battle of Roſbach in 1757. He had ſeveral ſix-inch mortars, made with trunnions and mounted on travelling carriages, which fired obliquely on the enemy's lines, and amongſt their horſe. They were charged with eight ounces of powder, and elevated at an angle of one degree fifteen minutes, and did great execution; for the ſhells rolling along the lines with burning-fuſes made the ſtouteſt of the enemy not wait for their burſting.

Sect. II. *Theory of Gunnery.*

2
Theory of gunnery firſt attempted by Tartalea.

The uſe of fire-arms had been known for a long time before any theory concerning them was attempted. The firſt author who wrote profeſſedly on the flight of cannon-ſhot was Tartalea. In 1537 he publiſhed a book, at Venice, intitled *Nova Scientia;* and afterwards another, intitled *Quæſiti et Inventioni diverſi*, printed at the ſame place in 1546, in which he treats profeſſedly on theſe motions. His diſcoveries were but few, on account of the imperfect ſtate of mechanical knowledge at that time. However, he determined that the greateſt range of cannon was with an elevation of 45 degrees. He likewiſe determined, (contrary to the opinion of practitioners), that no part of the tract deſcribed by a bullet was a right line: although the curvature was in ſome caſes ſo little, that it was not attended to. He commpared it to the ſurface of the ſea; which, though it appears to be a plane, is yet undoubtedly incurvated round the centre of the earth. He alſo aſſumes to himſelf the invention of the gunner's quadrant, and often gave ſhrewd gueſſes at the event of ſome untried methods. But as he had not opportunities of being converſant in the practice, and founded his opinions only on ſpeculation, he was condemned by moſt of the ſucceeding writers, though often without any ſufficient reaſon. The philoſophers of thoſe times alſo intermedded in the queſtions hence ariſing, and many diſputes on motion were ſet on foot (eſpecially in Italy), which continued till the time of Galileo, and probably gave riſe to his celebrated *Dialogues on motion*. Theſe were publiſhed in the year 1638; but in this interval, and before Galileo's doctrine was thoroughly eſtabliſhed, many theories of the motion of military projectiles, and many tables of their comparative ranges at different elevations, were publiſhed; all of them egregiouſly fallacious, and utterly irreconcileable with the motions of theſe bodies. Very few of the ancients indeed refrained from indulging themſelves in ſpeculations concerning the difference betwixt natural, violent, and mixed motions; although ſcarce any two of them could agree in their theories.

3
Experiments by different perſons on the ranges of artillery.

It is ſtrange, however, that, during all theſe conteſts, ſo few of thoſe who were intruſted with the charge of artillery though it worth while to bring theſe theories to the teſt of experiment. Mr Robins informs us, in his Preface to the *New Principles of Gunnery*, that he had met with no more than four authors who had treated on this ſubject. The firſt of theſe is Collado, who has given the ranges of a falconet carrying a three-pound ſhot to each point of the gunner's quadrant. But from his numbers it is manifeſt, that the piece was not charged with its cuſtomary allotment of gun-powder. The reſults of his trials were, that the point-blank ſhot, or that in which the path of the ball did not ſenſibly deviate from a right line, extended 268 paces. At an elevation of one point (or $7^\circ\frac{1}{2}$ of the gunner's quadrant) the range was 594 paces; at an elevation of two points, 794 paces; at three points, 954 paces; at four, 1010: at five, 1040; and at ſix, 1053 paces. At the ſeventh point, the range fell between thoſe of the third and fourth: at the eighth point, it fell between the ranges of the ſecond and third; at the ninth point, it fell between the ranges of the firſt and ſecond; at the tenth point, it fell between the point-blank diſtance and that of the firſt point: and at the eleventh point, it fell very near the piece.—The paces ſpoke of by this author are not geometrical ones, but common ſteps.

The year after Collado's treatiſe, another appeared on the ſame ſubject by one Bourne an Engliſhman. His elevations were not regulated by the points of the gunner's quadrant, but by degrees; and he aſcertains the proportions between the ranges at different elevations and the extent of the point-blank ſhot. According to him, if the extent of the point-blank ſhot be repreſented by 1, the range at 5° elevation will be $2\frac{2}{9}$, at 10° it will be $3\frac{2}{3}$, at 15° it will be $4\frac{1}{3}$, at 20° it will be $4\frac{5}{6}$, and the greateſt random will be $5\frac{1}{2}$. This laſt, he tells us, is in a calm day when the piece is elevated to 42°; but according to the ſtrength of the wind, and as it favours or oppoſes the flight of the ſhot, it may be from 45° to 36°.—He hath not informed us with what piece he made his trials; though by his proportions it ſeems to have been a ſmall one. This however ought to have been attended to, as the relation between the extent of different ranges varies extremely according to the velocity and denſity of the bullet.

After him Eldred and Anderſon, both Engliſhmen, publiſhed treatiſes on this ſubject. The firſt publiſhed his treatiſe in 1656, and has given the actual ranges of different pieces of artillery at ſmall elevations all under ten degrees. His principles were not rigorouſly true, though not liable to very conſiderable errors; yet, in conſequence of their deviation from the truth, he found it impoſſible to make ſome of his experiments agree with his principles.

4
Galileo's theory.

In 1638, Galileo, printed his dialogues on motion. In theſe he pointed out the general laws obſerved by nature in the production and compoſition of motion; and was the firſt who deſcribed the action and effects of gravity on falling bodies. On theſe principles he determined, that the flight of a cannon ſhot, or any other projectile, would be in the curve of a parabola, except in as far as it was diverted from that track by the reſiſtance of the air. He has alſo propoſed the means of examining the inequalities which ariſe from thence, and of diſcovering what ſenſible effects that reſiſtance would produce in the motion of a bullet at ſome given diſtance from the piece.

Though Galileo had thus ſhown, that independent of the reſiſtance of the air, all projectiles would, in their flight deſcribe the curve of a parabola; yet thoſe who came after him, ſeem never to have imagined that it was neceſſary to conſider how far the operations of gunnery were affected by this reſiſtance. The ſubſequent writers indeed boldly aſſerted, without making the experiment, that no conſiderable variation could ariſe from the reſiſtance of the air in the flight of ſhells or cannon ſhot. In this perſuaſion they ſupported themſelves chiefly by conſidering the extreme rarity of the air, compared with thoſe denſe and ponderous bodies; and at laſt it became an almoſt generally eſtabliſhed maxim, that the flight of theſe boders was nearly in the curve of a parabola.

5
New theory by Anderſon.

In 1674, Mr Anderſon, abovementioned publiſhed his treatiſe on the nature and effects of the gun; in which he proceeds on the principles of Galileo, and ſtrenuouſly aſſerts, that the flight of all bullets is in the curve of a parabola; undertaking to anſwer all objections that could be brought to the contrary. The ſame thing was alſo undertaken by Mr Blondel, in a treatiſe publiſhed at Paris in 1683; where, after long diſcuſſion, the author concludes, that the variations from the air's reſiſtance are ſo ſlight as ſcarce merit notice. The ſame ſubject is treated of in the Philoſophical Tranſactions, Nº 216. p. 68. by Dr Halley; and he alſo, ſwayed by the very great diſproportion between the denſity of the air and that of iron or lead, thinks it reaſonable to believe, that the oppoſition of the air to large metal ſhot is ſcarcely diſcernible; although in ſmall and light ſhot he owns that it muſt be accounted for.

But though this hypotheſis went on ſmoothly in ſpeculation: yet Anderſon, who made a great number of trials, found it impoſſible to ſupport it without ſome new modification. For though it does not appear that he ever examined the comparative ranges of either cannon or muſket ſhot when fired with their uſual velocities, yet his experiments on the ranges of ſhells thrown with ſmall velocities (in compariſon of thoſe abovementioned), convinced him that their whole tract was not parabolical. But inſtead of making the proper inferences from hence, and concluding the reſiſtance of the air to be of conſiderable efficacy, he framed a new hypotheſis; which was, that the ſhell or bullet, at its firſt diſcharge, flew to a certain diſtance in a right line, from the end of which line only it began to deſcribe a parabola. And this right line, which he calls the *line* of the *impulſe* of the *fire*, he ſuppoſes to be the ſame in all elevations. Thus, by aſſigning a proper length to this line of impulſe, it was always in his power to reconcile any two ſhots made at different angles, let them differ as widely as we pleaſe to ſuppoſe. But this he could not have done with three ſhots; nor indeed doth he ever tell us the event of his experiments when three ranges were tried at one time.

6
Laws of the air's reſiſtance laid down by Newton.

When Sir Iſacc Newton's *Principia* was publiſhed, he particularly conſidered the reſiſtance of the air to projectiles which moved with ſmall velocities; but as he never had an opportunity of making experiments on thoſe which move with ſuch prodigious ſwiftneſs, he did not imagine that a difference in velocity could make ſuch differences in the reſiſtance as are now found to take place. Sir Iſaac found, that, in ſmall velocities, the reſiſtance was increaſed in the duplicate proportion of the ſwiftneſs with which the body moved; that is, a body moving with twice the velocity of another of equal magnitude, would meet with four times as much reſiſtance as the firſt, with thrice the velocity it would meet with nine times the reſiſtance, &c.—This principle itſelf is now found to be erroneous with regard to military projectiles; though, if it had been properly attended to, the reſiſtance of the air might even from thence have been reckoned much more conſiderable than was commonly done. So far, however, were thoſe who treated this ſubject ſcientifically, from giving a proper allowance for the reſiſtance of the atmoſphere, that their theories differed moſt egregiouſly from the truth. Huygens alone ſeems to have attended to this principle; for, in the year 1690, he publiſhed a treatiſe on Gravity, in which he gave an account of ſome experiments tending to prove, that the track of all projectiles moving with very ſwift motions was widely different from that of a parabola. All the reſt of the learned acquieſced in the juſtneſs of Galileo's doctrine, and very erroneous calculations concerning the ranges of cannon were accordingly given. Nor was any notice taken of theſe errors till the year 1716. At that time Mr Reſſons, a French officer of artillery, diſtinguiſhed by the number of ſieges at which he had ſerved, by his high military rank, and by his abilities in his profeſſion, gave a memoir to the Royal Academy, of which he was a member, importing, that, "although it was agreed, that theory joined with practice did conſtitute the perfection of every art; yet experience had taught him, that theory was of very little ſervice in the uſe of mortars: That the works of M. Blondel had juſtly enough deſcribed the ſeveral parabolic lines, according to the different degrees of the elevation of the piece; but that practice had convinced him, there was no theory in the effect of gunpowder; for having endeavoured, with the greateſt preciſion, to point a mortar agreeably to theſe calculations, he had never been able to eſtabliſh any ſolid foundation upon them."

7
Erroneous in military projectiles.

8
All theſe theories widely different from the truth.

From the hiſtory of the academy, it doth not appear that the ſentiments of Mr Reſſons were at any time controverted, or any reaſon offered for the failure of the theory of projectiles when applied to uſe. Nothing farther, however, was done till the time of Benjamin Robins, who in 1742 publiſhed a treatiſe, intitled, New Principles of Gunnery, in which he hath treated particularly not only of the reſiſtance of the atmoſphere, but almoſt every thing elſe relating to the flight of military projectiles, and indeed advanced the theory of gunnery much nearer perfection than ever it was before.

9
Mr Robins firſt introduces a true theory.

10
His method of determining the force of gun powder.

The firſt thing conſidered by Mr Robins, and which is indeed the foundation of all other particulars relative to gunnery, is the exploſive force of gunpowder. This he determined to be owing to an elaſtic fluid ſimilar to our atmoſphere, having its elaſtic force greatly increaſed by the heat. “If a red-hot iron (ſays he) be included in a receiver, and the receiver be exhauſted, and gunpowder be then let fall on the iron, the powder will take fire, and the mercurial gage will ſuddenly deſcend upon the exploſion; and though it immediately aſcends again, it will never riſe to the height it firſt ſtood at, but will continue depreſſed by a ſpace proportioned to the quantity of powder which was let fall on the iron.—The ſame production likewiſe takes place when gunpowder is fired in the air: for if a ſmall quantity of powder is placed in the upper part of a glaſs tube, the lower part of which is immerſed in water, and the fluid be made to riſe ſo near the top, that only a ſmall portion of air is left in that part where the gunpowder is placed; if in this ſituation the communication of the upper part of the tube with the external air is cloſed, and the gunpowder fired, which may be eaſily done by means of a burning-glaſs, the water will in this experiment deſcend on the exploſion, as the quickſilver did in the laſt; and will always continue depreſſed below the place at which it ſtood before the exploſion. The quantity of this depreſſion will be greater if the quantity of powder be increaſed, or the diameter of the tube be diminiſhed.

“When any conſiderable quantity of gunpowder is fired in an exhauſted receiver, by being let fall on a red-hot iron, the mercurial gage inſtantly deſcends upon the exploſion, and as ſuddenly aſcends again. After a few vibrations, none of which except the firſt are of any great extent, it ſeemingly fixes at a point lower than where it ſtood before the exploſion. But even when the gage has acquired this point of apparent reſt, it ſtill continues riſing for a conſiderable time, although by ſuch imperceptible degrees, that it can only be diſcovered by comparing its place at diſtant intervals: however, it will not always continue to aſcend; but will riſe ſlower and ſlower, till at laſt it will be abſolutely fixed at a point lower than where the mercury ſtood before the exploſion. The ſame circumſtances nearly happen, when powder is fired in the upper part of an unexhauſted tube, whoſe lower part is immerſed in water.

“That the elaſticity or preſſure of the fluid produced by the firing of gunpowder is, *cæteris paribus*, directly as its denſity, may be proved from hence, that if in the ſame receiver a double quantity of powder be let fall, the mercury will ſubſide twice as much as in the firing of a ſingle quantity. Alſo the deſcents of the mercury, when equal quantities of powder are fired in different receivers, are reciprocally as the capacities of thoſe receivers, and conſequently as the denſity of produced fluid in each. But as, in the uſual method of trying this experiment, the quantities of powder are ſo very ſmall that it is difficult to aſcertain theſe proportions with the requiſite degree of exactneſs, I took a large receiver containing about 520 inches, and letting fall at once on the red-hot iron one drachm or the ſixteenth part of an ounce avoirdupois of powder, the receiver being firſt nearly exhauſted; the mercury, after the exploſion, was ſubſided two inches exactly, and all the powder had taken fire. Then heating the iron a ſecond time, and exhauſting the receiver as before, two drachms were let down at once, which ſunk the mercury three inches and three quarters; and a ſmall part of the powder had fallen beſide the iron, which (the bottom of the receiver being wet) did not fire, and the quantity which thus eſcaped did appear to be nearly ſufficient, had it fallen on the iron, to have ſunk the mercury a quarter of an inch more; in which caſe the two deſcents, viz. two inches and four inches, would have been accurately in the proportion of the reſpective quantities of powder; from which proportion, as it was, they very little varied.

“As different kinds of gunpowder produce different quantities of this fluid, in proportion to their different degrees of goodneſs, before any definite determination of this kind can take place, it is neceſſary to aſcertain the particular ſpecies of powder that is propoſed to be uſed. (Here Mr Robins determines in all his experiments to make uſe of government-powder, as conſiſting of a certain and invariable proportion of materials, and therefore preferable to ſuch kinds as are made according to the fancy of private perſons.)

“This being ſettled, we muſt further premiſe theſe two principles: 1. That the elaſticity of this fluid increaſes by heat and diminiſhes by cold, in the ſame manner as that of the air; 2. That the denſity of this fluid, and conſequently its weight, is the ſame with the weight of an equal bulk of air, having the ſame elaſticity and the ſame temperature. Now, from the laſt experiment it appears, that $\frac{1}{16}$ of an ounce avoirdupois or about 27 grains Troy of powder, ſunk the gage, on its exploſion, two inches; and the mercury in the barometer ſtanding at near 30 inches, $\frac{15}{16}$ths of an ounce avoirdupois, or 410 grains Troy, would have filled the receiver with a fluid whoſe elaſticity would have been equal to the whole preſſure of the atmoſphere, or the ſame with the elaſticity of the air we breathe; and the content of the receiver being about 520 cubic inches, it follows, that $\frac{15}{16}$ths of an ounce of powder will produce 520 cubic inches of a fluid poſſeſſing the ſame degree of elaſticity with the common air; whence an ounce of powder will produce near 575 cubic inches of ſuch a fluid.

“But in order to aſcertain the denſity of this fluid, we muſt conſider what part of its elaſticity, at the time of this determination, was owing to the heat it received from the included hot iron and the warm receiver Now the general heat of the receiver being manifeſtly leſs than that of boiling water, which is known to increaſe the elaſticity of the air to ſomewhat more than $\frac{1}{4}$ of its augmented quantity; I collect from hence and other circumſtances, that the augmentation of elaſticity from this cauſe was about $\frac{1}{5}$ of the whole: that is, if the fluid ariſing from the exploſion had been reduced to the temperature of the external air, the deſcent of the mercurial gage, inſtead of two inches, would have been only $1\frac{1}{5}$ inch; whence 575, reduced in the proportion of five to four, become 460; and this laſt number repreſents the cubic inches of an elaſtic fluid equal in denſity and elaſticity with common air, which are produced from the exploſion of 1 ounce avoirdupoiſe of gunpowder; the weight of which quantity of fluid, according to the uſual eſtimation of the weight of air, is 131 grains; whence the weight of this fluid is $\frac{131}{437}$ or $\frac{3}{10}$ths nearly of the weight of the generating powder. The ratio of the bulk of gunpowder to the bulk of this fluid may be determined from conſidering that 17 drams avoirdupois of powder fill two cubic inches, if the powder be well ſhook together; therefore augmenting the number laſt found in the proportion of 16 to 17, the reſulting term $488\frac{3}{4}$ is the number of cubic inches of an elaſtic fluid, equal in denſity with the air produced from two cubic inches of powder; whence the ratio of the reſpective bulk of the powder, and of the fluid produced from it, is in round numbers as 1 to 244."—This calculation was afterwards juſtified by experiments.

"If this fluid, inſtead of expanding when the powder was fired, had been confined in the ſame ſpace which the powder filled before the exploſion then it would have had, in that confined ſtate, a degree of elaſticity 244 times greater than that of common air; and this independent of the great augmentation this elaſticity would receive from the action of the fire in that inſtant.

"Hence, then, we are certain, that any quantity of powder, fired in a confined ſpace, which it adequately fills, exerts, at the inſtant of its exploſion, againſt the ſides of the veſſel containing it, and the bodies it impels before it, a force at leaſt 244 times greater than the elaſticity of the common air, or, which is the ſame thing than the preſſure of the atmoſphere; and this without conſidering the great addition which this force will receive from the violent degree of heat with which it is affected at that time.

"To determine how far the elaſticity of air is augmented when heated to the extremeſt degree of red-hot iron, I took a piece of a muſket-barrel about ſix inches in length, and ordered one end to be cloſed up entirely; but the other end was drawn out conically, and finiſhed in an aperture of about $\frac{1}{4}$ of an inch in diameter. The tube thus fitted, was heated to the extremity of a red heat in a ſmith's forge; and was then immerſed with its aperture downwards in a bucket of water, and kept there till it was cool: after which it was taken out carefully, and the water which had entered it in cooling was exactly weighed. The heat given to the tube at each time, was the beginning of what workmen call a *white heat*; and to prevent the ruſhing in of the aqueous vapour at the immerſion, which would otherwiſe drive out great part of the air, and render the experiment fallacious, I had an iron wire filed tapering, ſo as to fit the aperture of the tube, and with this I always ſtopped it up before it was taken from the fire, letting the wire remain in till the whole was cool, when, removing it, the due quantity of water would enter. The weight of the water thus taken in at three different trials was 610 grains, 595 grains, and 600 grains, reſpectively. The content of the whole cavity of the tube was 796 grains of water; whence the ſpaces remaining unfilled in theſe three experiment were 186, 201, and 196 grains reſpectively. Theſe ſpaces undoubtedly contained all the air which, when the tube was red-hot, extended through its whole concavity; conſequently the elaſticity of the air, when heated to the extreme heat of red-hot iron, was to the elaſticity of the ſame air, when reduced to the temperature of the ambient atmoſphere, as the whole capacity of the tube to the reſpective ſpaces taken up by the cooled air; that is, as 796 to 186, 201, 196: or taking the medium of theſe three trials, as 796 to $194\frac{1}{3}$.

"As air and this fluid appear to be equally affected by heat and cold, and conſequently have their elaſticities equally augmented by the addition of equal degrees of heat to each; if we ſuppoſe the heat with which the flame of fired powder is endowed to be the ſame with that of the extreme heat of red-hot iron, then the elaſticity of the generated fluid will be greater at the time of the exploſion than afterwards, when it is reduced to the temperature of the ambient air, in the ratio of 796 to $194\frac{1}{3}$ nearly. It being allowed then, (which ſurely is very reaſonable), that the flame of gunpowder is not leſs hot than red-hot iron, and the elaſticity of the air, and conſequently of the fluid generated by the exploſion, being augmented in the extremity of this heat in the ratio of $194\frac{1}{3}$, to 796, it follows, that if 244 be augmented in this ratio, the reſulting number, which is $999\frac{1}{3}$, will determine how many times the elaſticity of the flame of fired powder exceeds the elaſticity of common air, ſuppoſing it to be confined in the ſame ſpace which the powder filled before it was fired. Hence then the abſolute quantity of the preſſure exerted by gunpowder at the moment of its exploſion may be aſſigned; for, ſince the fluid then generated has an elaſticity of $999\frac{1}{3}$, or in round numbers 1000 times greater than that of the atmoſphere, and ſince common air by its elaſticity exerts a preſſure on any given ſurface equal to the weight of the incumbent atmoſphere with which it is in equilibrio, the preſſure exerted by fired powder before it dilates itſelf is 1000 times greater than the preſſure of the atmoſphere: and conſequently the quantity of this force, on a ſurface of an inch ſquare, amounts to above ſix ton weight; which force, however, diminiſhes as the fluid dilates itſelf.

11
Prodigious power of fired powder.

"But though we have here ſuppoſed that the heat of gunpowder when fired in any conſiderable quantity, is the ſame with iron heated to the extremity of red heat, or to the beginning of a white heat, yet it cannot be doubted but that the fire produced in the exploſion is ſomewhat varied (like all other fires) by a greater or leſſer quantity of fuel; and it may be preſumed, that, according to the quantity of powder fired together, the flame may have all the different degrees, from a languid red heat to that ſufficient for the vitrification of metals. But as the quantity of powder requiſite for the production of this laſt mentioned heat, is certainly greater than what is ever fired together for any military purpoſe, we cannot be far from our ſcope, if we ſuppoſe the heat of ſuch quantities as are uſually fired to be nearly the ſame with that of red-hot iron; allowing a gradual augmentation to this heat in larger quantities and diminiſhing it when the quantities are very ſmall."

Having

12
Mr Robins's method of determining the velocities of balls.

Having thus determined the force of the gunpowder, Mr Robins next proceeds to determine the velocity with which the ball is diſcharged. The ſolution of this problem depends on the two following principles. 1. That the action of the powder on the bullet ceaſes as ſoon as the bullet is got out of the piece. 2. That all the powder of the charge is fired and converted into elaſtic fluid before the bullet is ſenſibly moved from its place.

“ The firſt of theſe (ſays Mr Robins) will appear manifeſt, when it is conſidered how ſuddenly the flame will extend itſelf on every ſide, by its own elaſticity, when it is once got out of the mouth of the piece; for by this means its force will then be diſſipated, and the bullet no longer ſenſibly affected by it.

13
Inſtantaneous firing of powder.

“ The ſecond principle is indeed leſs obvious, being contrary to the general opinion of almoſt all writers on this ſubject. It, might however, be ſufficient for the proof of this poſition, to obſerve the prodigious compreſſion of the flame in the chamber of the piece. Thoſe who attend to this circumſtance, and to the eaſy paſſage of the flame through the intervals of the grains, may ſoon ſatisfy themſeves, that no one grain contained in that chamber can continue for any time uninflamed, when thus ſurrounded and preſſed by ſuch an active fire. However, not to rely on mere ſpeculation in a matter of ſo much conſequence, I conſidered, that if part only of the powder is fired, and that ſucceſſively; then by laying a greater weight before the charge (ſuppoſe two or three bullets inſtead of one), a greater quantity of powder would neceſſarily be fired, ſince a heavier weight would be a longer time in paſſing through the barrel. Whence it ſhould follow, that two or three bullets would be impelled by a much greater force than one only. But the contrary to this appears by experiment; for firing one, two, and three bullets laid contiguous to each other with the ſame charge reſpectively, I have found that their velocities were not much different from the reciprocal of their ſubduplicate quantities of matter; that is, if a given charge would communicate to one bullet a velocity of 1700 feet in a ſecond, the ſame charge would communicate to two bullets a velocity from 1250 to 1300 feet in a ſecond, and to three bullets a velocity from 1050 to 1110 feet in the ſame time. From hence it appears, that, whether a piece is loaded with a greater or leſs weight of bullet, the action is nearly the ſame; ſince all mathematicians know, that if bodies containing different quantities of matter are ſucceſſively impelled through the ſame ſpace by the ſame power acting with a determined force at each point of that ſpace; then the velocities given to theſe different bodies will be reciprocally in the ſubduplicate ratio of their quantities of matter. The exceſs of the velocities of the two and three bullets above what they ought to have been by this rule (which are that of 1200 and 980 feet in a ſecond), undoubtedly ariſes from the flame, which, eſcaping by the ſide of the firſt bullet, acts on the ſurface of the ſecond and third.

14
Why ſome powder is blown out of the mouth of a cannon without being fired.

“ Now, this exceſs has in many experiments been imperceptible, and the velocities have been reciprocally in the ſubduplicate ratios of the number of bullets, to ſufficient exactneſs; and where this error has been greater, it has never ariſen to an eighth part of the whole: but if the common opinion was true, that a ſmall part only of the powder fires at firſt, and other parts of it ſucceſſively as the bullet paſſes through the barrel, and that a conſiderable part of it is often blown out of the piece without firing at all; then the velocity which three bullets received from the exploſion ought to have been much greater than we have found it to be.—But the truth of this ſecond poſtulate more fully appears from thoſe experiments, by which it is ſhown, that the velocities of bullets may be aſcertained to the ſame exactneſs when they are acted on through a barrel of four inches in length only, as when they are diſcharged from one of four feet.

“ With reſpect to the grains of powder which are often blown out unfired, and which are always urged as a proof of the gradual firing of the charge, I believe Diego Uffano, a perſon of great experience in the art of gunnery, has given the true reaſon for this accident; which is, that ſome ſmall part of the charge is often not rammed up with the reſt, but is left in the piece before the wad, and is by this means expelled by the blaſt of air before the fire can reach it. I muſt add, that, in the charging of cannon and ſmall arms, eſpecially after the firſt time, this is ſcarcely to be avoided by any method I have yet ſeen practiſed. Perhaps, too, there may be ſome few grains in the beſt powder, of ſuch an heterogeneous compoſition as to be leſs ſuſceptible of firing; which, I think, I have myſelf obſerved; and theſe, though they are ſurrounded by the flame, may be driven out unfired.

15
Demonſtration of the force of fired powder on the ball.
Plate CCXXV. fig. 1.

“ Theſe poſtulates being now allowed to be juſt, let AB repreſent the axis of any piece of artillery, A the breech, and B the muzzle; DC the diameter of its bore, and DEGC a part of its cavity filled with powder. Suppoſe the ball that is to be impelled to lie with its hinder ſurface at the line GE; then the preſſure exerted at the exploſion on the circle of which GE is the diameter, or, which is the ſame thing, the preſſure exerted in the direction FB on the ſurface of the ball, is eaſily known from the known dimenſions of that circle. Draw any line FH perpendicular to FB, and AI parallel to FH; and through the point H, to the aſymptotes IA and AB, deſcribe the hyperbola KHNQ; then, if FH repreſents the force impelling the ball at the point F, the force impelling the ball at any other point as at M, will be repreſented by the line MN, the ordinate to the hyperbola at that point. For when the fluid impelling the body along has dilated itſelf to M, its denſity will be then to its original denſity in the ſpace DEGC reciprocally as the ſpaces through which it is extended; that is, as FA to MA, or as MN to FH: but it has been ſhown, that the impelling force or elaſticity of this fluid is directly as its denſity; therefore, if FH repreſents the force at the point F, MN will repreſent the like force at the point M.

“ Since the abſolute quantity of the force impelling the ball at the point F is known, and the weight of the ball is alſo known, the proportion between the force with which the ball is impelled and its own gravity is known. In this proportion take FH to FL, and drawn LP parallel to FB; then, MN the ordinate to the hyperbola in any point will be to its part MR, cut off by the line LP, as the impelling force of the powder in that point M to the gravity of the ball; and conſequently the line LP will determine a line proportional to the uniform force of gravity in every point; whilſt the hyperbola HNQ determines in like manner ſuch ordinates as are proportional to the impelling force of the powder in every point; whence by the 39th Prop. of lib. I. of Sir Iſaac Newton's Principia, the areas FLPB and FHQB are in the duplicate proportion of the velocities which the ball would acquire when acted upon by its own gravity through the ſpace FB, and when impelled through the ſame ſpace by the force of the powder. But ſince the ratio of AF to AB and the ratio of FH to FL are known, the ratio of the area FLPB to the area FHQB is known; and thence its ſubduplicate. And ſince the line FB is given in magnitude, the velocity which a heavy body would acquire when impelled through this line by its own gravity is known; being no other than the velocity it would acquire by falling through a ſpace equal to that line: find then another velocity to which this laſt mentioned velocity bears the given ratio of the ſubduplicate of the area FLPB to the area FHQB; and this velocity thus found is the velocity the ball will acquire when impelled through the ſpace FB by the action of the inflamed powder.

" Now to give an example of this: Let us ſuppoſe AB, the length of the cylinder, to be 45 inches, its diameter DC, or rather the diameter of the ball, to be $\frac{3}{4}$ths of an inch; and AF, the extent of the powder, to be $2\frac{1}{8}$th inches; to determine the velocity which will be communicated to a leaden bullet by the exploſion, ſuppoſing the bullet to be laid at firſt with its ſurface contiguous to the powder.

" By the theory we have laid down, it appears, that at the firſt inſtant of the exploſion the flame will exert, on the bullet lying cloſe to it, a force 1000 times greater than the preſſure of the atmoſphere. The medium preſſure of the atmoſphere is reckoned equal to a column of water 33 feet in height; whence, lead being to water as 11.345 to 1, this preſſure will be equal to that of a column of lead 349 inches in height. Multiplying this by 1000, therefore, a column of lead 34900 inches (upwards of half a mile) in height, would produce a preſſure on the bullet equal to what is exerted by the powder in the firſt inſtant of the exploſion; and the leaden ball being $\frac{3}{4}$ths of an inch in diameter, and conſequently equal to a cylinder of lead of the ſame baſe half an inch in height, the preſſure at firſt acting on it will be equal to 34900×2, or 69800 times its weight: whence FL to FH as 1 to 69800; and FB to FA as $45-2\frac{5}{8}$; or $42\frac{3}{8}$ to $2\frac{5}{8}$; that is, as 339 to 21; whence the rectangle FLPB is to the rectangle AFHS as 339 to 21×69800, that is, as 1 to 4324.—And from the known application of the logarithms to the menſuration of the hyperbolic ſpaces it follows, that the rectangle AFHS is to the area FHQB as 43,429, &c. is to the tabular logarithm of $\frac{AB}{AF}$; that is of $\frac{360}{21}$ which is 1,2340579; whence the ratio of the rectangle FLPB to the hyperbolic area FHQB is compounded of the ratios of 1 to 4324—and of ,43499, &c. to 1.2340579; which together make up the ratio of 1 to 12263, the ſubduplicate of which is the ratio of 1 to 110,7; and in this ratio is this velocity which the bullet would acquire by gravity in falling through a ſpace equal to FB, to the velocity the bullet will acquire from the action of the powder impelling it through FB. But the ſpace FB being $42\frac{3}{8}$ inches, the velocity a heavy body will acquire in falling through ſuch a ſpace is known to be what would carry it nearly at the rate of 1507 feet in a ſecond; whence the velocity to which this has the ratio of 1 to 110,7 is a velocity which will carry the ball at the rate of 1668 feet in one ſecond. And this is the velocity which according to the theory, the bullet in the preſent circumſtances would acquire from the action of the powder during the time of its dilatation.

" Now this velocity being once computed for one caſe, is eaſily applied to any other; for if the cavity DEGC left behind the bullet be only in part filled with powder, then the line HF, and conſequently the area FHQB will be diminiſhed in the proportion of the whole cavity to the part filled. If the diameter of the bore be varied, the lengths AB and AF remaining the ſame, then the quantity of powder and the ſurface of the bullet which it acts on, will be varied in the duplicate proportion of the diameter, but the weight of the bullet will vary in the triplicate proportion of the diameter; wherefore the line FH, which is directly as the abſolute impelling force of the powder, and reciprocally as the gravity of the bullet, will change in the reciprocal proportion of the diameter of the bullet. If AF, the height of the cavity left behind the bullet be increaſed or diminiſhed, the rectangle of the hyperbola, and conſequently the area correſponding to ordinates in any given ratio, will be increaſed or diminiſhed in the ſame proportion. From all which it follows, that the area FHQB, which is in the duplicate proportion of the velocity of the impelled body, will be directly as the logarithm $\frac{AB}{AF}$ (where AB repreſents the length of the barrel, and AF the length of the cavity left behind the bullet); alſo directly as the part of that cavity filled with powder; and inverſely as the diameter of the bore, or rather of the bullet, likewiſe directly as AF, the height of the cavity left behind the bullet. Conſequently the velocity being computed as above, for a bullet of a determined diameter, placed in a piece of a given length, and impelled by a given quantity of powder, occupying a given cavity behind the bullet; it follows, that by means of theſe ratios, the velocity of any other bullet may be thence deduced; the neceſſary circumſtances of its poſition, quantity of powder, &c. being given. Where note, that in the inſtance of this ſuppoſition, we have ſuppoſed the diameter of the ball to be $\frac{3}{4}$ths of an inch; whence the diameter of the bore will be ſomething more, and the quantity of powder contained in the ſpace DEGC will amount exactly to 12 pennyweights, a ſmall wad of tow included.

" In order to compare the velocities communicated to bullets by the exploſion, with the velocities reſulting from the theory by computation, it is neceſſary that the actual velocities with which bullets move ſhould be diſcovered. The only methods hitherto practiſed for this purpoſe, have been either by obſerving the time of the flight of a ſhot through a given ſpace, or by meaſuring the range of a ſhot at a given elevation; and thence computing, on the parabolic hypotheſis,

theſis, what degree of velocity would produce this range.—The firſt method labours under this inſurmountable difficulty, that the velocities of theſe bodies are often ſo ſwift, and conſequently the time obſerved is ſo ſhort that an imperceptible error in that time may occaſion an error in the velocity thus found of 2, 3, 4, 5, or 600 feet, in a ſecond. The other method is ſo fallacious, by reaſon of the reſiſtance of the atmoſphere (to which inequality the firſt is alſo liable), that the velocities thus aſſigned may not perhaps be the tenth part of the actual velocities ſought.

16 Machine diſcovering the velocities of bullets.

" The ſimpleſt method of determining this velocity is by means of the inſtrument repreſented fig. 2. where ABCD repreſents the body of the machine compoſed of the three poles B, C, D, ſpreading at bottom, and joining together at the top A; being the ſame with what is vulgarly uſed in lifting and weighing very heavy bodies, and is called by workmen the *triangles*. On two of theſe poles, towards their tops, are ſcrewed on the ſockets RS; and on theſe ſockets the pendulum EFGHIK is hung by means of its croſs-piece EF, which becomes its axis of ſuſpenſion, and on which it muſt be made to vibrate with great freedom. The body of this pendulum is made of iron, having a broad part at bottom, and its lower part is covered with a thick piece of wood GKIH, which is faſtened to the iron by ſcrews. Something lower than the bottom of the pendulum there is a brace OP, joining the two poles to which the pendulum is ſuſpended; and to this brace there is faſtened a contrivance MNU, made with two edges of ſteel, bearing on each other in the line UN, ſomething in the manner of a drawing-pen; the ſtrength with which theſe edges preſs on each other being diminiſhed or increaſed at pleaſure by means of a ſcrew Z going through the upper piece. There is faſtened to the bottom of the pendulum a narrow ribbon LN, which paſſes between theſe ſteel edges, and which afterwards, by means of an opening cut in the lower piece of ſteel, hangs looſely down, as at W.

17 Method of uſing the machine.

" This inſtrument thus fitted, if the weight of the pendulum be known, and likewiſe the reſpective diſtances of its centre of gravity, and of its centre of oſcillation from its axis of ſuſpenſion, it will thence be known what motion will be communicated to this pendulum by the percuſſion of a body of a known weight moving with a known degree of celerity, and ſtriking it in a given point; that is, if the pendulum be ſuppoſed at reſt before the percuſſion, it will be known what vibration it ought to make in conſequence of ſuch a determined blow; and, on the contrary, if the pendulum, being at reſt, is ſtruck by a body of a known weight, and the vibration which the pendulum makes after the blow is known, the velocity of the ſtriking body may from thence be determined.

" Hence then if a bullet of a known weight ſtrikes the pendulum, and the vibration, which the pendulum makes in conſequence of the ſtroke, be aſcertained; the velocity with which the ball moved is thence to be known.

" Now the extent of the vibration made by the pendulum after the blow, may be meaſured to great accuracy by the ribbon LN. For let the preſſure of the edges UN on the ribbon be ſo regulated by the ſcrew Z, that the motion of the ribbon between them may be free and eaſy, though with ſome minute reſiſtance; then ſettling the pendulum at reſt, let the part LN between the pendulum and the edges be drawn ſtrait, but not ſtrained, and fix a pin in that part of the ribbon which is then contiguous to the edges: let now a ball impinge on the pendulum; then the pendulum ſwinging back will draw out the ribbon to the juſt extent of its vibration, which will conſequently be determined by the interval on the ribbon between the edges UN and the place of the pin.

" The weight of the whole pendulum, wood and all, was 56 lb. 3 oz. its centre of gravity was 52 inches diſtant from its axis of ſuſpenſion, and 200 of its ſmall ſwings were performed in the time of 253 ſeconds; whence its centre of oſcillation (determined from hence) is $62\frac{2}{3}$ inches diſtant from that axis. The centre of the piece of wood GKIH is diſtant from the ſame axis 66 inches.

" In the compound ratio of 65 to $62\frac{2}{3}$, and 66 to 52, take the quantity of matter of the pendulum to a 4th quantity, which will be 42 lb. $\frac{1}{7}$ oz. Now geometers will know, that if the blow be ſtruck on the centre of the piece of wood GKIH, the pendulum will reſiſt to the ſtroke in the ſame manner as if this laſt quantity of matter only (42 lb. $\frac{1}{2}$ oz.) was concentrated in that point, and the reſt of the pendulum was taken away: whence, ſuppoſing the weight of the bullet impinging in that point to be the $\frac{1}{12}$th of a pound, or the $\frac{1}{504}$th of this quantity of matter nearly, the velocity of the point of oſcillation after the ſtroke will, by the laws obſerved in the congreſs of ſuch bodies as rebound not from each other, be the $\frac{1}{505}$th of the velocity the bullet moved with before the ſtroke; whence the velocity of this point of oſcillation after the ſtroke being aſcertained, that multiplied by 505 will give the velocity with which the ball impinged.

" But the velocity of the point of oſcillation after the ſtroke is eaſily deduced from the chord of the arch, through which it aſcends by the blow; for it is a well known propoſition, that all pendulous bodies aſcend to the ſame height by their vibratory motion as they would do, if they were projected directly upwards from their loweſt point, with the ſame velocity they have in that point: wherefore, if the verſed ſine of the aſcending arch be found (which is eaſily determined from the chord and radius being given), this verſed ſine is the perpendicular height to which a body projected upwards with the velocity of the point of oſcillation would ariſe; and conſequently what that velocity is, can be eaſily computed by the common theory of falling bodies.

" For inſtance the chord of the arch, deſcribed by the aſcent of the pendulum after the ſtroke meaſured on the ribbon, has been ſometimes $17\frac{1}{4}$ inches; the diſtance of the ribbon from the axis of ſuſpenſion is $71\frac{1}{8}$th inches; whence reducing $17\frac{1}{4}$th in the ratio of $71\frac{1}{8}$th to 66, the reſulting number, which is nearly 16 inches, will be the chord of the arch through which the centre of the board GKIH aſcended after the ſtroke; now the verſed ſine of the arch, whoſe chord is 16 inches, and its radius 66, is 1,93939; and the velocity which would carry a body to this height, or, which is the ſame thing, the velocity which a body would acquire by deſcending through this ſpace, is nearly that of $3\frac{1}{4}$ feet in 1″.

GUNNERY. Plate CCXXV.

Fig. 1.

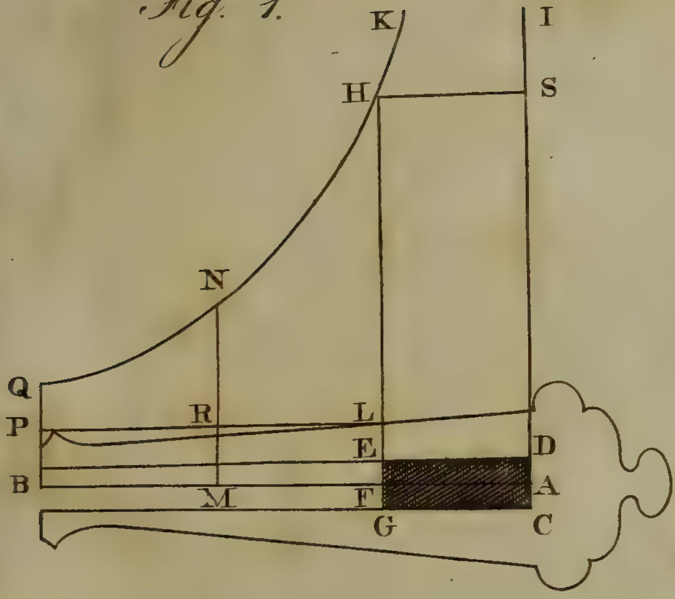


Fig. 2.

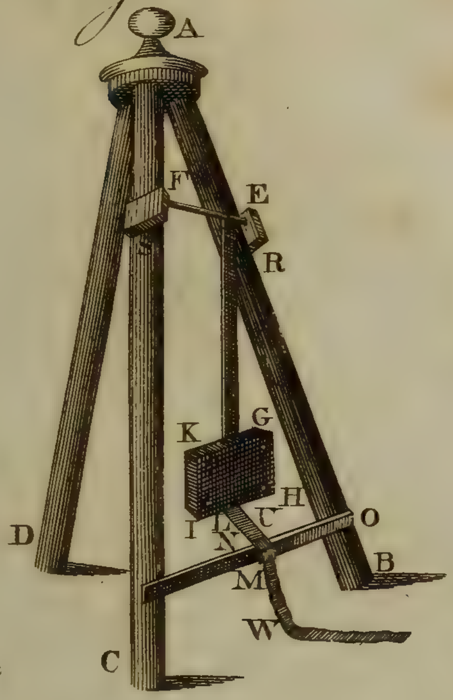


Fig. 3.

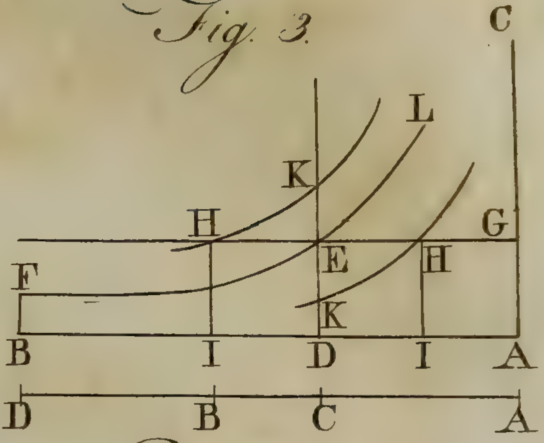


Fig. 4.

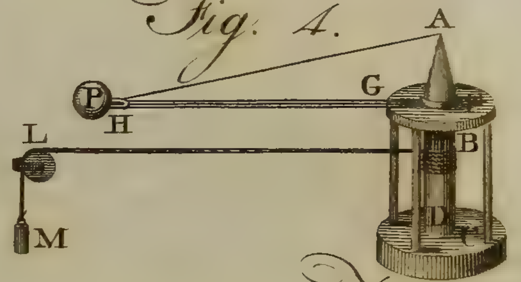


Fig. 5.

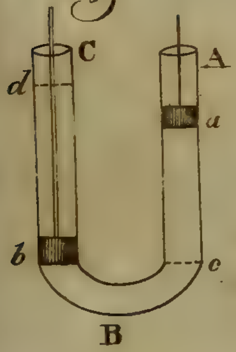


Fig. 6.

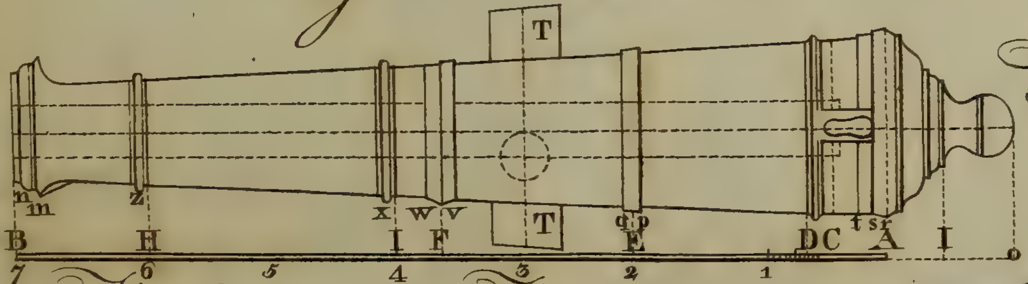


Fig. 12.

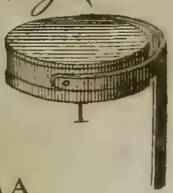


Fig. 11.

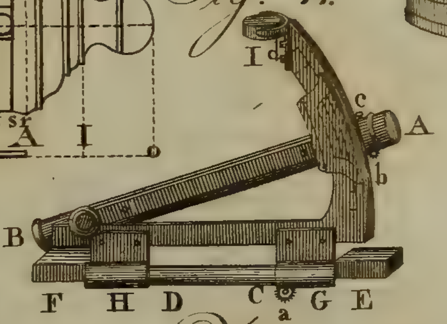


Fig. 8.

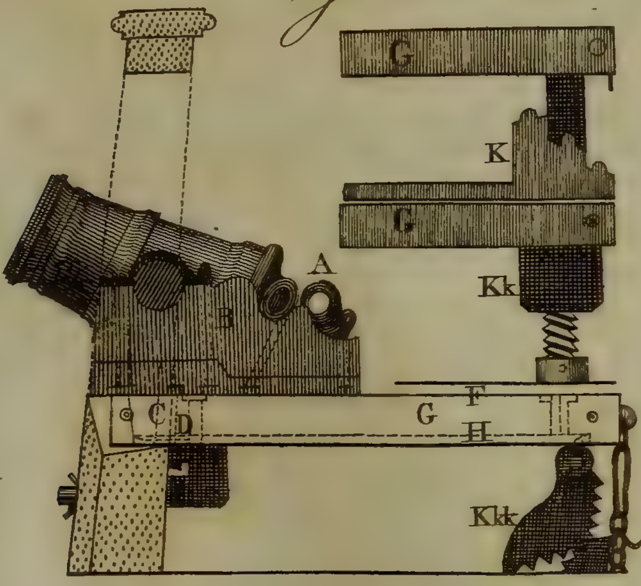


Fig. 7.

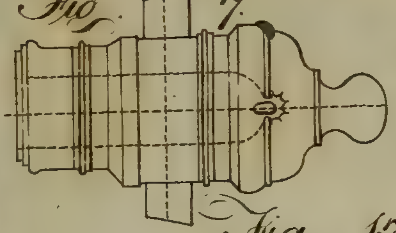


Fig. 13.

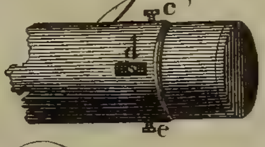


Fig. 17.

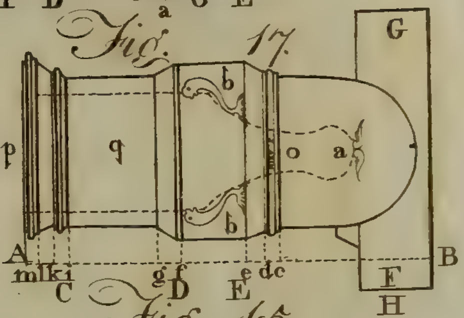


Fig. 16.

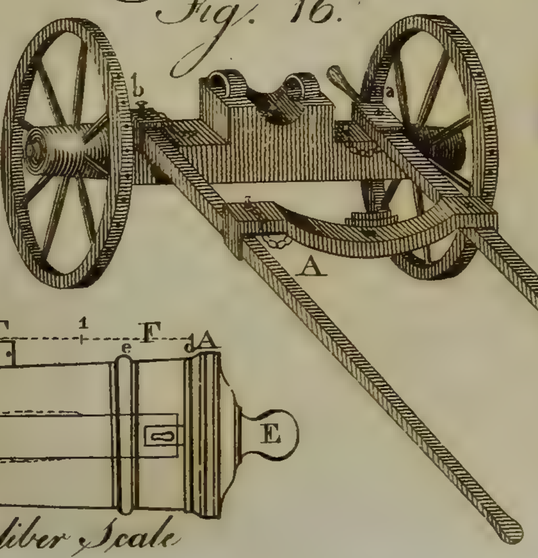


Fig. 15.

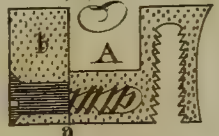


Fig. 14.

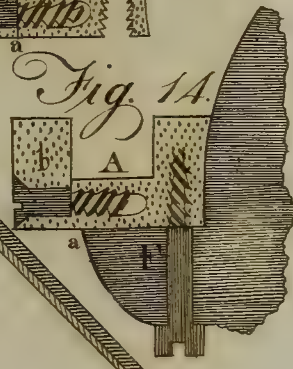


Fig. 9.

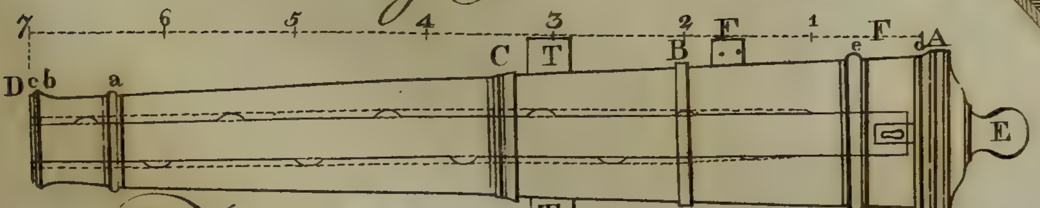
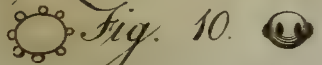


Fig. 10.



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"To determine then the velocity with which the bullet impinged on the centre of the wood, when the chord of the arch deſcribed by the aſcent of the pendulum, in conſequence of the blow, was $17\frac{1}{4}$th inches meaſured on the ribbon, no more is neceſſary than to multiply $3\frac{1}{4}$th by 505, and the reſulting number 1641 will be the feet which the bullet would deſcribe in 1″, if it moved with the velocity it had at the moment of its percuſſion: for the velocity of the point of the pendulum, on which the bullet ſtruck, we have juſt now determined to be that of $3\frac{1}{4}$th feet in 1″; and we have before ſhown, that this is the $\frac{1}{505}$th of the velocity of the bullet. If then a bullet weighing $\frac{1}{12}$th of a pound ſtrikes the pendulum in the centre of the wood GKIH, and the ribbon be drawn out $17\frac{1}{4}$th inches by the blow; the velocity of the bullet is that of 1641 feet in 1″. And ſince the length the ribbon is drawn is always nearly the chord of the arch deſcribed by the aſcent, (it being placed ſo as to differ inſenſibly from thoſe chords which moſt frequently occur), and theſe chords are known to be in the proportion of the velocities of the pendulum acquired from the ſtroke; it follows, that the proportion between the lengths of ribbon drawn out at different times, will be the ſame with that of the velocities of the impinging bullets; and conſequently, by the proportion of theſe lengths of ribbon to $17\frac{1}{4}$th, the proportion of the velocity with which the bullets impinge, to the known velocity of 1641 feet in 1″, will be determined.

8
Cautions to be obſerved in making theſe experiments.

"Hence then is ſhown in general how the velocities of bullets of all kinds may be found out by means of this inſtrument; but that thoſe who may be diſpoſed to try theſe experiments may not have unforſeen difficulties to ſtruggle with, we ſhall here ſubjoin a few obſervations, which it will be neceſſary for them to attend to, both to ſecure ſucceſs to their trials and ſafety to their perſons.

"And firſt, that they may not conceive the piece of wood GKIH to be an unneceſſary part of the machine, we muſt inform them, that if a bullet impelled by a full charge of powder ſhould ſtrike directly on the iron, the bullet would be beaten into ſhivers by the ſtroke, and theſe ſhivers will rebound back with ſuch violence, as to bury themſelves in any wood they chance to light on, as I have found by hazardous experience; and beſides the danger, the pendulum will not in this inſtance aſcertain the velocity of the bullet, becauſe the velocity with which the parts of it rebound is unknown.

"The weight of the pendulum, and the thickneſs of the wood, muſt be in ſome meaſure proportioned to the ſize of the bullets which are uſed. A pendulum of the weight here deſcribed will do very well for all bullets under three or four ounces, if the thickneſs of the board be increaſed to ſeven or eight inches for the heavieſt bullets; beech is the tougheſt and propereſt wood for this purpoſe.

"It is hazardous ſtanding on the ſide of the pendulum, unleſs the board be ſo thick, that the greateſt part of the bullet's force is loſt before it comes at the iron; for if it ſtrikes the iron with violence, the ſhivers of lead, which cannot return back through the wood, will force themſelves out between the wood and iron, and will fly to a conſiderable diſtance.

"As there is no effectual way of faſtening the wood to the iron but by ſcrews, the heads of which muſt come through the board; the bullets will ſometimes light on thoſe ſcrews, from whence the ſhivers will diſperſe themſelves on every ſide.

"When in theſe experiments ſo ſmall a quantity of powder is uſed, as will not give to the bullet a velocity of more than 400 or 500 feet in 1″; the bullet will not ſtick in the wood, but will rebound from it entire, and (if the wood be of a very hard texture) with a very conſiderable velocity. Indeed I have never examined any of the bullets which have thus rebounded, but I have found them indented by the bodies they have ſtruck againſt in their rebound.

"To avoid then theſe dangers, to the braving of which in philoſophical reſearches no honour is annexed; it will be convenient to fix whatſoever barrel is uſed, on a ſtrong heavy carriage, and to fire it with a little ſlow match. Let the barrel too be very well fortified in all its length; for no barrel (I ſpeak of muſket barrels) forged with the uſual dimenſions will bear many of the experiments without burſting. The barrel I have moſt relied on, and which I procured to be made on purpoſe, is nearly as thick at the muzzel as at the breech; that is, it has in each place nearly the diameter of its bore in thickneſs of metal.

"The powder uſed in theſe experiments ſhould be exactly weighed: and that no part of it be ſcattered in the barrel, the piece muſt be charged with a ladle in the ſame manner as is practiſed with cannon; the wad ſhould be of tow, of the ſame weight each time, and no more than is juſt neceſſary to confine the powder in its proper place: the length of the cavity left behind the ball ſhould be determined each time with exactneſs; for the increaſing or diminiſhing that ſpace will vary the velocity of the ſhot, although the bullet and quantity of powder be not changed. The diſtance of the mouth of the piece from the pendulum ought to be ſuch, that the impulſe of the flame may not act on the pendulum; this will be prevented in a common barrel charged with $\frac{1}{2}$ an ounce of powder, if it be at the diſtance of 16 or 18 feet: in larger charges the impulſe is ſenſible farther off; I have found it to extend to above 25 feet; however, between 25 and 18 feet is the diſtance I have uſually choſen."

19
Account of Mr Robinss experiments.

With this inſtrument, or others ſimilar to it, Mr Robins made a great number of experiments on barrels of different lengths, and with different charges of powder. He hath given us the reſults of 61 of theſe; and having compared the actual velocities with the computed ones, his theory appears to have come as near the truth as could well be expected. In ſeven of the experiments there was a perfect coincidence; the charges of powder being ſix or twelve pennyweights; the barrels 45, 24.312, and 7.06 inches in length. The diameter of the firſt (marked A) was $\frac{3}{4}$ths of an inch; of the ſecond (B) was the ſame; and of D, 83 of an inch. In the reſt of the experiments, another barrel (C) was uſed, whoſe length was 12.375 inches, and the diameter of its bore $\frac{3}{4}$th inches.—In 14 more of the experiments, the difference between the length of the chord of the pendulum's arch ſhown by the theory and the actual experiment was $\frac{1}{10}$th of an inch over or under. This ſhowed an error in the theory varying according to the different lengths of the chord from $\frac{1}{71}$ to $\frac{1}{47}$ of the whole; the charges of powder

Theory.

were the ſame as in the laſt.—In 16 other experiments the error was $\frac{2}{10}$ths of an inch, varying from $\frac{1}{85}$ to $\frac{1}{23}$ of the whole; the charges of powder were 6, 8, 9, or 12 pennyweights.—In ſeven other experiments, the error was $\frac{3}{10}$ths of an inch, varying from $\frac{1}{62}$ to $\frac{1}{23}$ of the whole; the charges of powder ſix or twelve pennyweights. In eight experiments, the difference was $\frac{4}{10}$ths of an inch, indicating an error from $\frac{1}{42}$ to $\frac{1}{43}$ of the whole; the charges being 6, 9, 12, and 24 pennyweights of powder. In three experiments, the error was $\frac{5}{10}$ths, varying from $\frac{1}{38}$th to $\frac{1}{12}$th of the whole; the charges 8 and 12 pennyweights of powder. In two experiments the error was $\frac{6}{10}$ths, in one caſe amounting to ſomething leſs than $\frac{1}{32}$, in the other to $\frac{1}{14}$ of the whole; the charges 12 and 36 pennyweights of powder. By one experiment the error was ſeven, and by another eight, tenths; the firſt amounting to $\frac{1}{10}$th nearly, the latter to almoſt $\frac{1}{9}$th of the whole: the charges of powder 6 or 12 pennyweights. The laſt error, however, Mr Robins aſcribes to the wind. The two remaining experiments varied from theory by 1.3 inches, ſomewhat more than $\frac{1}{9}$th of the whole: the charges of powder were 12 pennyweights in each; and Mr Robins aſcribes the error to the dampneſs of the powder. In another caſe, he aſcribes an error of $\frac{6}{10}$ths to the blaſt of the powder on the pendulum.

20 His concluſions from them.

From theſe experiments Mr Robins deduces the following concluſions. "The variety of theſe experiments, and the accuracy with which they correſpond to the theory, leave us no room to doubt of its certainty.—This theory, as here eſtabliſhed, ſuppoſes, that, in the firing of gunpowder, about $\frac{3}{10}$ths of its ſubſtance is converted by the ſudden inflammation into a permanently elaſtic fluid, whoſe elaſticity, in proportion to its heat and denſity, is the ſame with that of common air in the like circumſtances; it farther ſuppoſes, that all the force exerted by gunpowder in its moſt violent operations, is no more than the action of the elaſticity of the fluid thus generated; and theſe principles enable us to determine the velocities of bullets impelled from fire-arms of all kinds; and are fully ſufficient for all purpoſes where the force of gunpowder is to be eſtimated.

"From this theory many deductions may be made of the greateſt conſequence to the practical part of gunnery. From hence the thickneſs of a piece, which will enable it to confine, without burſting, any given charge of powder, is eaſily determined, ſince the effort of the powder is known. From hence appears the inconcluſiveneſs of what ſome modern authors have advanced, relating to the advantages of particular forms of chambers for mortars and cannon; for all their laboured ſpeculations on this head are evidently founded on very erroneous opinions about the action of fired powder. From this theory too we are taught the neceſſity of leaving the ſame ſpace behind the bullet when we would, by the ſame quantity of powder, communicate to it an equal degree of velocity; ſince, on the principles already laid down, it follows, that the ſame powder has a greater or leſs degree of elaſticity, according to the different ſpaces it occupies. The method which I have always practiſed for this purpoſe has been by marking the rammer; and this is a maxim which ought not to be diſpenſed with when cannon are fired at an elevation, particularly in thoſe called by the French *batteries á ricochet*.

Theory,

"From the continued action of the powder, and its manner of expanding deſcribed in this theory, and the length and weight of the piece, one of the moſt eſſential circumſtances in the well directing of artillery may be eaſily aſcertained. All practitioners are agreed, that no ſhot can be depended on, unleſs the piece be placed on a ſolid platform: for if the platform ſhakes with the firſt impulſe of the powder, it is impoſſible but the piece muſt alſo ſhake: which will alter its direction, and render the ſhot uncertain. To prevent this accident, the platform is uſually made extremely firm to a conſiderable depth backwards; ſo that the piece is not only well ſupported in the beginning of its motion, but likewiſe through a great part of its recoil. However, it is ſufficiently obvious, that when the bullet is ſeparated from the piece, it can be no longer affected by the trembling of the piece or platform; and, by a very eaſy computation, it will be found, that the bullet will be out of the piece before the latter hath recoiled half an inch: whence, if the platform be ſufficiently ſolid at the beginning of the recoil, the remaining part of it may be much ſlighter; and hence a more compendious method of conſtructing platforms may be found out.

"From this theory alſo it appears how greatly theſe authors have been miſtaken, who have attributed the force of gunpowder, or at leaſt a conſiderable part of it, to the action of the air contained either in the powder or between the intervals of the grains: for they have ſuppoſed that air to exiſt in its natural elaſtic ſtate, and to receive all its addition of force from the heat of the exploſion. But from what hath been already delivered concerning the increaſe of the air's elaſticity by heat, we may conclude that the heat of the exploſion cannot augment this elaſticity to five times its common quantity; conſequently the force ariſing from this cauſe only cannot amount to more than the 200th part of the real force exerted on the occaſion.

"If the whole ſubſtance of the powder was converted into an elaſtic fluid at the inſtant of the exploſion, then from the known elaſticity of this fluid aſſigned by our theory, and its known denſity, we could eaſily determine the velocity with which it would begin to expand, and could thence trace out its future augmentations in its progreſs through the barrel: but as we have ſhown that the elaſtic fluid, in which the activity of gunpowder conſiſts, is only $\frac{3}{10}$ths of the ſubſtance of the powder, the remaining $\frac{7}{10}$ths will, in the exploſion, be mixed with the elaſtic part, and will by its weight retard the activity of the exploſion; and yet they will not be ſo completely united as to move with one common motion; but the unelaſtic part will be leſs accelerated than the reſt, and ſome will not even be carried out of the barrel, as appears by the conſiderable quantity of unctuous matter which adheres to the inſide of all fire-arms after they have been uſed.—Theſe inequalities in the expanſive motion of the flame oblige us to recur to experiments for its accurate determination.

"The experiments made uſe of for this purpoſe were of two kinds. The firſt was made by charging the barrel A with 12 pennyweights of powder, and a ſmall

21 Experiments for determining the velocity of fired gunpowder.

ſmall wad of tow only: and then placing its mouth 19 inches from the centre of the pendulum. On firing it in this ſituation, the impulſe of the flame made it aſcend through an arch whoſe chord was 13.7 inches; whence, if the whole ſubſtance of the powder was ſuppoſed to ſtrike againſt the pendulum, and each part to ſtrike with the ſame velocity, that common velocity muſt have been at the rate of about 2650 feet in a ſecond.—But as ſome part of the velocity of the flame was loſt in paſſing through 19 inches of air: I made the remaining experiments in a manner not liable to this inconvenience.

I fixed the barrel A on the pendulum, ſo that its axis might be both horizontal and alſo perpendicular to the plane HK; or, which is the ſame thing, that it might be in the plane of the pendulum's vibration: the height of the axis of the piece above the centre of the pendulum was ſix inches; and the weight of the piece, and of the iron that faſtened it, &c. was $12\frac{1}{4}$ lb. The barrel in this ſituation being charged with 12 penny-weights of powder, without either ball or wad, only put together with the rammer; on the diſcharge the pendulum aſcended through an arch whoſe chord was 10 inches, or reduced to an equivalent blow in the centre of the pendulum, ſuppoſing the barrel away, it would be 14.4 inches nearly.—The ſame experiment being repeated, the chord of the aſcending arch was 10.1 inches, which reduced to the centre, is 14.6 inches.

" To determine what difference of velocity there was in the different parts of the vapour, I loaded the piece again with 12 penny-weights of powder. and rammed it down with a wad of tow, weighing one penny-weight. Now, I conceived that this wad being very light, would preſently acquire that velocity with which the elaſtic part of the fluid would expand itſelf when uncompreſſed; and I accordingly found, that the chord of the aſcending arch was by this means increaſed to 12 inches, or at the centre to 17.3; whence, as the medium of the other two experiments is 14.5, the pendulum aſcended through an arch 2.8 inches longer, by the additional motion of one penny-weight of matter, moving with the velocity of the ſwifteſt part of the vapour; and conſequently the velocity with which this penny-weight of matter moved, was that of about 7000 feet in a ſecond.

" It will perhaps be objected to this determination, that the augmentation of the arch through which the pendulum vibrated in this caſe was not all of it owing to the quantity of motion given to the wad, but part of it was produced by the confinement of the powder, and the greater quantity thereby fired. But if it were true that a part only of the powder fired when there was no wad, it would not happen that in firing different quantities of powder without a wad the chord would increaſe and decreaſe nearly in the ratio of theſe quantities; which yet I have found it to do: for with nine pennyweights that chord was 7.3 inches, which with 12 pennyweights we have ſeen was only 10, and 10.1 inches; and even with three pennyweights the chord was two inches; deficient from this proportion by 5 only; for which defect too other valid reaſons are to be aſſigned.

" And there is ſtill a more convincing proof that all the powder is fired, although no wad be placed before the charge, which is, that the part of the recoil ariſing from the expanſion of powder alone is found to be no greater when it impels a leaden bullet before it, than when the ſame quantity is fired without any wad to confine it. We have ſeen that the chord of the arch through which the pendulum roſe from the expanſive force of the powder alone is 10, or 10.1; and the chord of that arch, when the piece was charged in the cuſtomary manner with a bullet and wad, I found to be the firſt time $22\frac{1}{4}$, and the ſecond $22\frac{7}{8}$, or at a medium 22.56. Now the impulſe of the ball and wad, if they were ſuppoſed to ſtrike the pendulum in the ſame place in which the barrel was ſuſpended, with the velocity they had acquired at the mouth of the piece, would drive it through an arch whoſe chord would be about 12.3; as is known from the weight of the pendulum, the weight and poſition of the barrel, and the velocity of the bullet determined by our former experiments: whence, ſubtracting this number 12.3 from 22.56, the remainder 10.26 is nearly the chord of the arch which the pendulum would have aſcended through from the expanſion of the powder alone with a bullet laid before it. And this number, 10.26, differs but little from 10.1, which we have above found to the chord of the aſcending arch, when the ſame quantity of powder expanded itſelf freely without either bullet or wad before it.

" Again, that this velocity of 7000 feet in a ſecond is not much beyond what the moſt active part of the flame acquires in expanding, is evinced from hence, that in ſome experiments a ball has been found to be diſcharged with a velocity of 2400 feet in a ſecond: and yet it appeared not that the action of the powder was at all diminiſhed on account of this immenſe celerity: conſequently the degree of ſwiftneſs with which in this inſtance, the powder followed the ball without loſing any part of its preſſure, muſt have been much ſhort of what the powder alone would have expanded with, had not the ball been there.

" From theſe determinations may be deduced the force of petards; ſince their action depends entirely on the impulſe of the flame: and it appears that a quantity of powder properly diſpoſed in ſuch a machine, may produce as violent an effort as a bullet of twice its weight, moving with a velocity of 1400 or 1500 feet in a ſecond.

20 A bullet flies off with the greateſt velocity when laid at a diſtance from the powder.

" In many of the experiments already recited, the ball was not laid immediately contiguous to the powder, but at a ſmall diſtance, amounting, at the utmoſt, only to an inch and a half. In theſe caſes the theory agreed very well with the experiments. But if a bullet is placed at a greater diſtance from the powder, ſuppoſe at 12, 18, or 24 inches, we cannot then apply to this ball the ſame principles which may be applied to thoſe laid in contact, or nearly ſo, with the powder: for when the ſurface of the fired powder is not confined by a heavy body, the flame dilates itſelf with a velocity far exceeding that which it can communicate to a bullet by its continued preſſure: conſequently, as at the diſtance of 12, 18, or 24 inches, the powder will have acquired a conſiderable degree of this velocity of expanſion, the firſt motion of the ball will not be produced by the continual preſſure of the powder, but by the actual percuſſion of the flame; and it will therefore begin to move with a quantity of motion proportioned to the quantity of this flame, and the velocities of its reſpective parts.

“ From hence then it follows, that the velocity of the bullet, laid at a conſiderable diſtance before the charge ought to be greater than what would be communicated to it by the preſſure of the powder acting in the manner already mentioned: and this deduction from our theory we have confirmed by manifold experience; by which we have found, that a ball laid in the barrel A, with its hinder part 11¼ inches from its breech, and impelled by 12 pennyweights of powder, has acquired a velocity of about 1400 feet in a ſecond; when, if it had been acted on by the preſſure of the flame only, it would not have acquired a velocity of 1200 feet in a ſecond. The ſame we have found to hold true in all other greater diſtances (and alſo in leſſer, though not in the ſame degree), and in all quantities of powder: and we have likewiſe found, that theſe effects nearly correſpond with what has been already laid down about the velocity of expanſion and the elaſtic and unelaſtic parts of the flame.

“ From hence too ariſes another conſideration of great conſequence in the practice of gunnery; which is, that no bullet ſhould at any time be placed at a conſiderable diſtance before the charge, unleſs the piece is extremely well fortified: for a moderate charge of powder, when it has expanded itſelf through the vacant ſpace, and reaches the ball, will, by the velocity each part has acquired, accumulate itſelf behind the ball, and thereby be condenſed prodigiouſly; whence if the barrel be not extremely firm in that part, it muſt by means of this reinforced elaſticity, infallibly burſt. The truth of this reaſoning I have experienced in an exceeding good Tower-muſket, forged of very tough iron; for charging it with 12 pennyweights of powder, and placing the ball 16 inches from the breech, on firing it, the part of the barrel juſt behind the bullet was ſwelled out to double its diameter like a blown bladder, and two large pieces of two inches long were burſt out of it.

“ Having ſeen that the entire motion of a bullet laid at a conſiderable diſtance from the charge, is acquired by two different methods in which the powder acts on it; the firſt being the percuſſion of the parts of the flame with the velocity they had reſpectively acquired by expanding, the ſecond the continued preſſure of the flame through the remaining part of the barrel; I endeavoured to ſeparate theſe different actions, and retain that only which aroſe from the continued preſſure of the flame. For this purpoſe I no longer placed the powder at the breech, from whence it would have full ſcope for its expanſion; but I ſcattered it as uniformly as I could through the whole cavity left behind the bullet; imagining that by this means the progreſſive velocity of the flame in each part would be prevented by the expanſion of the neighbouring parts; and I found, that the ball being laid 11¼ inches from the breech, its velocity, inſtead of 1400 feet in a ſecond, which it acquired in the laſt experiments, was now no more than 1100 feet in the ſecond, which is 100 feet ſhort of what according to the theory ſhould ariſe from the continued preſſure of the powder only.

“ The reaſon of this deficiency, was doubtleſs, the inteſtine motion of the flame: for the aſcenſion of the powder thus diſtributed through ſo much larger a ſpace than it could fill, muſt have produced many reverberations and pulſations of the flame; and from theſe internal agitations of the fluid, its preſſure on the containing ſurface will (as is the cauſe of all other fluids) be conſiderably diminiſhed; and in order to avoid this irregularity, in all other experiments I took care to have the powder cloſely confined in as ſmall a ſpace as poſſible, even when the bullet lay at ſome little diſtance from it.

23
Of the reſiſtance of the air to the motion of bullets.

“ With regard to the reſiſtance of the air, which ſo remarkably affects all military projectiles, it is neceſſary to premiſe, that the greateſt part of authors have eſtabliſhed it as a certain rule, that while the ſame body moves in the ſame medium, it is always reſiſted in the duplicate proportion of its velocity; that is, if the reſiſted body move in one part of its track with three times the velocity with which it moved in ſome other part, then its reſiſtance to the greater velocity will be nine times the reſiſtance to the leſſer. If the velocity in one place be four times greater than in another, the reſiſtance of the fluid will be 16 times greater in the firſt than in the ſecond, &c. This rule, however, though pretty near the truth when the velocities are confined within certain limits, is exceſſively erroneous when applied to military projectiles, where ſuch reſiſtances often occur as could ſcarcely be effected, on the commonly received principles, even by a treble augmentation of its denſity.

“ By means of the machine already deſcribed, I have it in my power to determine the velocity with which a ball moves in any part of its track, provided I can direct the piece in ſuch a manner as to cauſe the bullet to impinge on a pendulum placed in that part: and therefore charging a muſket-barrel three times ſucceſſively with a leaden ball ¾ of an inch in diameter, and about half its weight of powder; and taking ſuch precaution in weighing of the powder and placing it, that I was aſſured by many previous trials, that the velocity of the ball could not differ by 20 feet in a ſecond from its medium quantity; I fired it againſt the pendulum placed at 25, 75, and 125 feet diſtance from the mouth of the piece reſpectively; and I found that it impinged againſt the pendulum, in the firſt caſe with a velocity of 1670 feet in a ſecond; in the ſecond caſe, with a velocity of 1550 feet in a ſecond; and in the third caſe, with a velocity of 1425 feet in a ſecond; ſo that, in paſſing through 50 feet of air, the bullet loſt a velocity of 120 or 125 feet in a ſecond; and the time of its paſſing through that ſpace being about $\frac{1}{32}$ or $\frac{3}{30}$ of a ſecond, the medium quantity of reſiſtance muſt, in theſe inſtances, have been about 120 times the weight of the ball; which (as the ball was nearly $\frac{1}{12}$ of a pound) amounts to about 10lb. avoirdupoiſe.

“ Now, if a computation be made according to the method laid down for compreſſed fluids in the 38th propoſition of Newton's *Principia*, ſuppoſing the weight of water to that of air as 850 to 1, it will be found that the reſiſtance to a globe of ¾ of an inch diameter, moving with a velocity of about 1600 feet in a ſecond, will not, on theſe principles amount to any more than 4 $\frac{1}{6}$ lb. avoirdupoiſe; whence, as we know that the rules contained in that propoſition are very accurate with regard to ſlow motions, we may hence conclude, that the reſiſtance of the air in ſlow motions is leſs than that in ſwift motions, in the ratio of $4\frac{1}{6}$ to 10; a proportion between that of 1 to 2, and 1 to 3.

“ Again, I charged the ſame piece a number of times with equal quantities of powder, and balls of the ſame weight, taking all poſſible care to give to every ſhot an equal velocity; and, firing three times againſt the pendulum placed only 25 feet from the mouth of the piece, the medium of the velocities with which the ball impinged was nearly that of 1690 feet in a ſecond: then removing the piece 175 feet from the pendulum, I found, taking the medium of five ſhots, that the velocity with which the ball impinged at this diſtance was 1300 feet in a ſecond; whence the ball, in paſſing through 150 feet of air, loſt a velocity of about 390 feet in a ſecond; and the reſiſtance computed from theſe numbers comes out ſomething more than in the preceding inſtance, it amounting here to between 11 and 12 pounds avoirdupoiſe; whence, according to theſe experiments, the reſiſting power of the air to ſwift motions is greater than to ſlow ones, in a ratio which approaches nearer to that of 3 to 1 than in the preceding experiments.

“ Having thus examined the reſiſtance to a velocity of 1700 feet in a ſecond, I next examined the reſiſtance to ſmaller velocities: and for this purpoſe, I charged the ſame barrel with balls of the ſame diameter, but, with leſs powder, and placing the pendulum at 25 feet diſtance from the piece, I fired againſt it five times with an equal charge each time: the medium velocity with which the ball impinged, was that of 1180 feet in a ſecond; then removing the pendulum to the diſtance of 250 feet, the medium velocity of five ſhots, made at this diſtance, was that of 950 feet in a ſecond: whence the ball, in paſſing through 225 feet of air, loſt a velocity of 230 feet in a ſecond: and as it paſſed through that interval in about $\frac{3}{14}$ of a ſecond, the reſiſtance to the middle velocity will come out to be near $33\frac{1}{2}$ times the gravity of the ball, or 2lb. 10 oz. avoirdupoiſe. Now, the reſiſtance to the ſame velocity, according to the laws obſerved in ſlower motions, amounts to $\frac{7}{11}$ of the ſame quantity; whence, in a velocity of 1065 feet in a ſecond, the reſiſting power of the air is augmented in no greater a proportion than that of 7 to 11; whereas we have ſeen in the former experiments, that to ſtill greater degrees of velocity the augmentation approached very near the ratio of one to three.

“ But farther, I fired three ſhot, of the ſame ſize and weight with thoſe already mentioned, over a large piece of water; ſo that their dropping into the water being very diſcernible, both the diſtance and time of their flight might be accurately aſcertained. Each ſhot was diſcharged with a velocity of 400 feet in a ſecond; and I had ſatisfied myſelf by many previous trials of the ſame charge with the pendulum, that I could rely on this velocity to ten feet in a ſecond. The firſt ſhot flew 313 yards in four ſeconds and a quarter, the ſecond flew 319 yards in four ſeconds, and the third 373 yards in five ſeconds and an half. According to the theory of reſiſtance eſtabliſhed for ſlow motions, the firſt ſhot ought to have ſpent no more than 3.2 ſeconds in its flight, the ſecond 3.28, and the the third 4 ſeconds: whence it is evident, that every ſhot was retarded conſiderably more than it ought to have been had that theory taken place in its motion: conſequently the reſiſtance of the air is very ſenſibly increaſed, even in ſuch a ſmall velocity as that of 400 feet in a ſecond.

Plate CCXXV. fig. 3.

“ As no large ſhot are ever projected in practice with velocities exceeding that of 1700 feet in a ſecond, it will be ſufficient for the purpoſes of a practical gunner to determine the reſiſtance to all leſſer velocities: which may be thus exhibited. Let AB be taken to AC, in the ratio of 1700 feet in a ſecond to the given velocity to which the reſiſting power of the air is required. Continue the line AB to D, ſo that BD may be to AD, as the reſiſting power of the air to ſlow motions is to its reſiſting power to a velocity of 1700 feet in a ſecond: then ſhall CD be to AD as the reſiſting power of the air to ſlow motions is to its reſiſting power to the given velocity repreſented by AC.

“ From the computations and experiments already mentioned, it plainly appears, that a leaden ball of $\frac{3}{4}$ of an inch diameter, and weighing nearly $2\frac{1}{3}$oz. avoirdupoiſe, if it be fired from a barrel of 45 inches in length, with half its weight of powder, will iſſue from that piece with a velocity which, if it were uniformly continued, would carry it near 1700 feet in a ſecond. —If, inſtead of a leaden ball, an iron one, of an equal diameter, was placed in the ſame ſituation in the ſame piece, and was impelled by an equal quantity of powder, the velocity of ſuch an iron-bullet would be greater than that of the leaden one in the ſubduplicate ratio of the ſpecific gravities of lead and iron; and ſuppoſing that ratio to be as three to two, and computing on the principles already laid down, it will appear, that an iron bullet of 24 lb. weight, ſhot from a piece of 10 feet in length, with 16 lb. of powder, will acquire from the exploſion a velocity which, if uniformly continued, would carry it nearly 1650 feet in a ſecond.

“ This is the velocity which, according to our theory, a cannon-ball of 24 lb. weight is diſcharged with when it is impelled by a full charge of powder; but if, inſtead of a quantity of powder weighing two-thirds of the ball, we ſuppoſe the charge to be only half the weight of it, then its velocity will on the ſame principles be no more than 1490 feet in a ſecond. The ſame would be the velocities of every leſſer bullet fired with the ſame proportions of powder, if the lengths of all pieces were conſtantly in the ſame ratio with the diameters of their bore; and although according to the uſual dimenſions of the ſmaller pieces of artillery, this proportion does not always hold, yet the difference is not great enough to occaſion a very great variation from the velocities here aſſigned; as will be obvious to any one who ſhall make a computation thereon. But in theſe determinations we ſuppoſe the windage to be no more than is juſt ſufficient for putting down the bullet eaſily; whereas in real ſervice, either through negligence or unſkilfulneſs, it often happens, that the diameter of the bore ſo much exceeds the diameter of the bullet, that great part of the inflamed fluid eſcapes by its ſide; whence the velocity of the ſhot in this caſe may be conſiderably leſs than what we have aſſigned. However, this perhaps may be compenſated by the greater heat which in all probability attends the firing of theſe large quantities of powder.

24 Solution of the difficulty concerning point-blank ſhot.

“From this great velocity of cannon-ſhot we may clear up the difficulty concerning the point-blank ſhot which occaſioned the invention of Anderſon's ſtrange hypotheſis †. Here our author was deceived by his not knowing how greatly the primitive velocity of the heavieſt ſhot is diminiſhed in the courſe of its flight by the reſiſtance of the air. And the received opinion of practical gunners is not more difficult to account for; ſince, when they agree that every ſhot flies in a ſtraight line to a certain diſtance from the piece, which imaginary diſtance they have called the *extent of the point-blank ſhot*, we need only ſuppoſe, that, within that diſtance which they thus determine, the deviation of the path of the ſhot from a ſtraight line is not very perceptible in their method of pointing. Now, as a ſhot of 24lb. fired with two-thirds of its weight of powder, will, at the diſtance of 500 yards from the piece, be ſeparated from the line of its original direction by an angle of little more than half a degree; thoſe who are acquainted with the inaccurate methods often uſed in the directing of cannon will eaſily allow, that ſo ſmall an aberration may not be attended to by the generality of practitioners, and the path of the ſhot may conſequently be deemed a ſtraight line; eſpecially as other cauſes of error will often intervene much greater than what ariſes from the incurvation of this line by gravity.

† See n° 5.

25 By increaſing the quantity of powder, the velocity of the ſhot will not continually increaſe.

“We have now determined the velocity of the ſhot both when fired with two-thirds of its weight and with half its weight of powder reſpectively; and on this occaſion I muſt remark, that on the principles of our theory, the increaſing the charge of powder will increaſe the velocity of the ſhot, till the powder arrives at a certain quantity; after which, if the powder be increaſed the velocity of the ſhot will diminiſh. The quantity producing the greateſt velocity, and the proportion between that greateſt velocity and the velocity communicated by greater and leſſer charges, may be thus aſſigned. Let AB repreſent the axis of the piece; draw AC perpendicular to it, and to the aſymptotes AC and AB draw any hyperbola LF, and draw BF parallel to AC; find out now the point D, where the rectangle ADEG is equal to the hyperbolic area DEFB; then will AD repreſent that height of the charge which communicates the greateſt velocity to the ſhot: whence AD being to AB as 1 to 2.71828, as appears from the table of logarithms, from the length of the line AD thus determined, and the diameter of the bore, the quantity of powder contained in this charge is eaſily known. If, inſtead of this charge, any other filling the cylinder to the height AI be uſed, draw IH parallel to AC, and through the point H to the ſame aſymptotes AC and AB deſcribe the hyperbola HK; then the greateſt velocity will be to the velocity communicated by the charge AI, in the ſubduplicate proportion of the rectangle AE to the ſame rectangle diminiſhed by the trilinear ſpace KKE.

Plate CCXXV. fig 3.

26 Exceeding great reſiſtance of the air.

It hath been already ſhown, that the reſiſtance of the air on the ſurface of a bullet of $\frac{3}{4}$ of an inch diameter, moving with a velocity of 1670 feet in a ſecond, amounted to about 10lb. It hath alſo been ſhown, that an iron-bullet weighing 24lb. if fired with 16lb. of powder (which is uſually eſteemed its proper battering charge), acquires a velocity of about 1650 feet in a ſecond, ſcarcely differing from the other: whence as the ſurface of this laſt bullet is more than 54 times greater than the ſurface of a bullet of $\frac{3}{4}$ of an inch diameter, and their velocities are nearly the ſame, it follows, that the reſiſtance on the larger bullet will amount to more than 540lb. which is near 23 times its own weight.

“The two laſt propoſitions are principally aimed againſt thoſe theoriſts who have generally agreed in ſuppoſing the flight of ſhot and ſhells to be nearly in the curve of a parabola. The reaſon given by thoſe authors for their opinion is the ſuppoſed inconſiderable reſiſtance of the air; ſince, as it is agreed on all ſides that the tract of projectiles would be a perfect parabola if there was no reſiſtance, it has from thence been too raſhly concluded, that the interruption which the ponderous bodies of ſhells and bullets would receive from ſuch a rare medium as air would be ſcarcely ſenſible, and conſequently that their parabolic flight would be hereby ſcarcely affected.

“Now the prodigious reſiſtance of the air to a bullet of 24lb. weight, ſuch as we have here eſtabliſhed it, ſufficiently confutes this reaſoning; for how erroneous muſt that hypotheſis be, which neglects as inconſiderable a force amounting to more than 20 times the weight of the moving body?” But here it is neceſſary to aſſume a few particulars, the demonſtrations of which, on the commonly received principles may be ſeen under the article PROJECTILES.

27 Common maxims concerning the motion of projectiles.

“1. If the reſiſtance of the air be ſo ſmall that the motion of a projected body is in the curve of a parabola, then the axis of that parabola will be perpendicular to the horizon, and conſequently the part of the curve in which the body aſcends will be equal and ſimilar to that in which it deſcends.

“2. If the parabola in which the body moves be terminated on a horizontal plane, then the vertex of the parabola will be equally diſtant from its two extremities.

“3. Alſo the moving body will fall on that horizontal plane in the ſame angle, and with the ſame velocity with which it was firſt projected.

“4. If a body be projected in different angles but with the ſame velocity, then its greateſt horizontal range will be when it is projected in an angle of 45 with the horizon.

“5. If the velocity with which the body is projected be known, then this greateſt horizontal range may be thus found. Compute, according to the common theory of gravity, what ſpace the projected body ought to fall through to acquire the velocity with which it is projected: then twice that ſpace will be the greateſt horizontal range, or the horizontal range when the body is projected in an angle of 45° with the horizon.

“6. The horizontal ranges of a body, when projected with the ſame velocity at different angles, will be between themſelves as the ſines of twice the angle in which the line of projection is inclined to the horizon.

7. “If a body is projected in the ſame angle with the horizon but with different velocities, the horizontal ranges will be in the duplicate proportion of thoſe velocities.

28 Prodigious errors of the common theory.

“Theſe poſtulates which contain the principles of the modern art of gunnery are all of them falſe; for it hath beeen already ſhewn, that a muſket-ball $\frac{3}{4}$ of an inch in diameter, fired with half its weight of powder, from a piece 45 inches long, moves with a velocity of near 1700 feet in a ſecond. Now, if this ball flew in the curve of a parabola, its horizontal range at 45° would be found by the 5th poſtulate to be about 17 miles. But all the practical writers aſſure us, that this range is equally ſhort of half a mile. Diego Ufano aſſigns to an arquebuſs, four feet in length, and carrying a leaden ball of $1\frac{1}{2}$ oz. weight (which is very near our dimenſions), an horizontral range of 797 common paces, when it is elevated between 40 and 50 degrees, and charged with a quantity of fine powder equal in weight to the ball. Merſennus alſo tells us, that he found the horizontal range of an arquebuſs at 45° to be leſs than 400 fathom, or 800 yards; whence, as either of theſe ranges are ſhort of half an Engliſh mile, it follows, that a muſket ſhot, when fired with a reaſonable charge of powder at the elevation of 45°, flies not $\frac{1}{34}$ part of the diſtance it ought to do if it moved in a parabola. Nor is this great contraction of the horizontal range to be wondered at, when it is conſidered that the reſiſtance of this bullet when it firſt iſſues from the piece amounts to 120 times its gravity, as hath been experimentally demonſtrated, n° 23.

"To prevent objections, our next inſtance ſhall be in an iron bullet of 24 lb. weight, which is the heavieſt in common uſe for land ſervice. Such a bullet fired from a piece of the common dimenſions with its greateſt allotment of powder hath a velocity of 1650 feet in a ſecond, as already ſhown. Now, if the horizontal range of this ſhot, at 45°, be computed on the parabolic hypotheſis by the fifth poſtulate, it will come out to be about 16 miles, which is between five and ſix times it real quantity; for the practical writers all agree in making it leſs than three miles.

"But farther, it is not only when projectiles move with theſe very great velocities that their flight ſenſibly varies from the curve of a parabola; the ſame aberration often takes place in ſuch as move ſlow enough to have their motion traced out by the eye: for there are few projectiles that can be thus examined, which do not viſibly diſagree with the firſt, ſecond, and third poſtulate; obviouſly deſcending thro' a curve, which is ſhorter and leſs inclined to the horizon than that in which they aſcended. Alſo the higheſt point of their flight, or the vertex of the curve, is much nearer the place where they fall to the ground than to that from whence they were at firſt diſcharged.

"I have found too by experience, that the fifth, ſixth, and ſeventh poſtulates are exceſſively erroneous when applied to the motions of bullets moving with ſmall velocities. A leaden bullet $\frac{3}{4}$ of an inch in diameter, diſcharged with a velocity of about 400 feet in a ſecond, and in an angle of 10° 5′ with the horizon, ranged on the horizontal plane no more than 448 yards: whereas its greateſt horizontal range being fonnd by the fifth poſtulate to be at leaſt 1700 yards, the range at 19° 5′ ought by the ſixth poſtulate to have been 1050 yards; whence, in this experiment, the range was not $\frac{3}{7}$ of what it muſt have been had the commonly received theory been true."

29
Rotatory motion of bullets a great ſource of deflection.

From this and other experiments, it is clearly proved, that the track deſcribed by the flight even of the heavieſt ſhot, is neither a parabola, nor approaching to a parabola, except when they are projected with very ſmall velocities. The nature of the curve really deſcribed by them is explained under the article Projectiles. But as a ſpecimen of the great complication of that ſubject, we ſhall here inſert an account of a very extraordinary circumſtance which frequently takes place therein.

"As gravity acts perpendicularly to the horizon, it is evident, that if no other power but gravity deflected a projected body from its courſe, its motion would be conſtantly performed in a plane perpendicular to the horizon, paſſing through the line of its original direction; but we have found, that the body in its motion often deviates from this plane, ſometimes to the right hand, and at other times to the left; and this in an incurvated line which is convex towards that plane: ſo that the motion of a bullet is frequently in a line having a double curvature, it being bent towards the horizon by the force of gravity, and again bent out of its original direction to the right or left by ſome other force: in this caſe no part of the motion of the bullet is performed in the ſame plane, but its track will lie in the ſurface of a kind of cylinder, whoſe axis is perpendicular to the horizon.

"This propoſition may be indiſputably proved by the experience of every one in the leaſt converſant with the practice of gunnery. The ſame piece which will carry its bullet within an inch of the intended mark at 10 yards diſtance, cannot be relied on to 10 inches in 100 yards, much leſs to 30 inches in 300 yards. Now this inequality can only ariſe from the track of the bullet being incurvated ſideways as well as downwards: for by this means the diſtance between that incurvated line and the line of direction will increaſe in a much greater ratio than that of the diſtance; theſe lines being coincident at the mouth of the piece, and afterwards ſeparating in the manner of a curve and its tangent, if the mouth of the piece be conſidered as the point of contact.—To put this matter out of all doubt, however, I took a barrel carrying a ball $\frac{3}{4}$ of an inch diameter, and fixing it on a heavy carriage, I ſatisfied myſelf of the ſteadineſs and truth of its direction, by firing at a board $1\frac{1}{7}$ feet ſquare, which was placed at 180 feet diſtance; for I found, that in 16 ſucceſſive ſhots I miſſed the mark but once. Now, the ſame barrel being fixed on the ſame carriage, and fired with a ſmall quantity of powder, ſo that the ſhock on the diſcharge would be much leſs, and conſequently the direction leſs changed, I found, that at 760 yards diſtance the ball flew ſometimes 100 yards to the right of the line it was pointed on, and ſometimes as much on the left. I found too, that its direction in the perpendicular line was not leſs uncertain, it falling one time above 200 yards ſhort of what it did at another; although by the niceſt examination of the piece after the diſcharge, it did not appear to have ſtarted in the leaſt from the poſition it was placed in.

"The reality of this double curvated tract being thus demonſtrated, it may perhaps be aſked, What can be the cauſe of a motion ſo different from what has been hitherto ſuppoſed? And to this I anſwer, That the deflection in queſtion muſt be owing to ſome power acting obliquely to the progreſſive motion of the body;

body; which power can be no other than the reſiſtance of the air. If it be farther aſked, how the reſiſtance of the air can ever come to be oblique to the progreſſive motion of the body? I farther reply, that it may ſometimes ariſe from inequalities in the reſiſted ſurface; but that its general cauſe is doubtleſs a whirling motion acquired by the bullet about its axis: for by this motion of rotation, combined with the progreſſive motion, each part of the bullet's ſurface will ſtrike the air very differently from what it would do if there was no ſuch whirl; and the obliquity of the action of the air ariſing from this cauſe will be greater as the motion of the bullet is greater in proportion to its progreſſive one.

"This whirling motion undoubtedly ariſes from the friction of the bullet againſt the ſide of the piece; and as the rotatory motion will in ſome part of its revolution conſpire with the progreſſive one, and another part be equally oppoſed to it; the reſiſtance of the air on the fore part of the bullet will be hereby affected, and will be increaſed in that part where the whirling motion conſpires with the progreſſive one, and diminiſhed where it is oppoſed to it: and by this means the whole effort of the reſiſtance, inſtead of being oppoſed to the direction of the body, will become oblique thereto, and will produce thoſe effects already mentioned. If it was poſſible to predict the poſition of the axis round which the bullet ſhould whirl, and if that axis was unchangeable during the whole flight of the bullet, then the aberration of the bullet by this oblique force would be in a given direction; and the incurvation produced thereby would regularly extend the ſame way from one end of its track to the other. For inſtance, if the axis of the whirl was perpendicular to the horizon, then the incurvation would be to the right or left. If that axis was horizontal, and perpendicular to the direction of the bullet, then the incurvation would be upwards or downwards. But as the firſt poſition of this axis is uncertain, and as it may perpetually ſhift in the courſe of the bullet's flight; the deviation of the bullet is not neceſſarily either in one certain direction, or tending to the ſame ſide in one part of its track that it does in another, but more uſually is continually changing the tendency of its deflection, as the axis round which it whirls muſt frequently ſhift its poſition to the progreſſive motion by many inevitable accidents.

"That a bullet generally acquires ſuch a rotatory motion, as here deſcribed, is, I think demonſtrable: however, to leave no room for doubt or diſpute, I confirmed it, as well as ſome other parts of my theory, by the following experiments.

30
Machine for meaſuring the air's reſiſtance.

"I cauſed the machine to be made repreſented Plate CCXXV. fig. 4. BCDE is a braſs barrel, moveable on its axis, and ſo adjuſted by means of friction-wheels, not repreſented in the figure, as to have no friction worth attending to. The frame in which this barrel is fixed is ſo placed that its axis may be perpendicular to the horizon. The axis itſelf is continued above the upper plate of the frame, and has faſtened on it a light hollow cone, AFG. From the lower part of this cone there is extended a long arm of wood, GH, which is very thin, and cut feather-edged. At its extremity there is a contrivance for fixing on the body, whoſe reſiſtance is to be inveſtigated (as here the globe P); and to prevent the arm GH from ſwaying out of its horizontal poſition by the weight of the annexed body P, there is a brace, AH, of fine wire, faſtened to the top of the cone which ſupports the end of the arm.

"Round the barrel BCDE, there is wound a fine ſilk line, the turns of which appear in the figure: and after this line hath taken a ſufficient number of turns, it is conducted nearly in a horizontal direction to the pully L over which it is paſſed, and then a proper weight M is hung to its extremity. If this weight be left at liberty, it is obvious that it will deſcend by its own gravity, and will, by its deſcent, turn round the barrel BCDE, together with the arm GH, and the body P faſtened to it. And whilſt the reſiſtance on the arm GH and on the body P is leſs than the weight M, that weight will accelerate its motion; and thereby the motion of GH and P will increaſe, and conſequently their reſiſtance will increaſe, till at laſt this reſiſtance and the weight M become nearly equal to each other. The motion with which M deſcends, and with which P revolves, will not then ſenſibly differ from an equable one. Whence it is not difficult to conceive, that, by proper obſervations made with this machine, the reſiſtance of the body P may be determined. The moſt natural method of proceeding in this inveſtigation is as follows: Let the machine firſt have acquired its equable motion, which it will uſually do in about five or ſix turns from the beginning; and then let it be obſerved, by counting a number of turns, what time is taken up by one revolution of the body P: then taking off the body P and the weight M, let it be examined what ſmaller weight will make the arm GH revolve in the ſame time as when P was fixed to it: this ſmaller weight being taken from M, the remainder is obviouſly equal in effort to the reſiſtance of the revolving body P; and this remainder being reduced in the ratio of the length of the arm to the ſemidiameter of the barrel, will then become equal to the abſolute quantity of the reſiſtance. And as the time of one revolution is known, and conſequently the velocity of the revolving body, there is hereby diſcovered the abſolute quantity of the reſiſtance to the given body P moving with a given degree of celerity.

"Here, to avoid all objections, I have generally choſe when the body P was removed, to fix in its ſtead a thin piece of lead of the ſame weight, placed horizontally; ſo that the weight which was to turn round the arm GH, without the body P, did alſo carry round this piece of lead. But the mathematicians will eaſily allow that there was no neceſſity for this precaution.—The diameter of the barrel BCDE, and of the ſilk ſtring wound round it, was 2.06 inches. The length of the arm GH, meaſured from the axis to the ſurface of the globe P, was 49.5 inches. The body P. the globe made uſe of, was of paſteboard; its ſurface very neatly coated with marbled paper. It was not much diſtant from the ſize of a 12lb. ſhot, being in diameter 4.5 inches, ſo that the radius of the circle deſcribed by the centre of the globe was 51.75 inches. When this globe was fixed at the end of the arm, and a weight of half a pound was hung at the end of the ſtring at M, it was examined how ſoon the motion of the deſcending weight M, and of the revolving body P, would become equable as to ſenſe. With this view.

three revolutions being ſuffered to elapſe, it was found that the next 10 were performed in 27¾″, 20 in leſs than 55″, and 30 in 82½″; ſo that the firſt 10 were performed in 27¾″, the ſecond in 27¼″, and the third in 27½″.

" Theſe experiments ſufficiently evince, that even with half a pound, the ſmalleſt weight made uſe of, the motion of the machine was ſufficiently equable after the firſt three revolutions.

" The globe abovementioned being now fixed at the end of the arm, there was hung on at M a weight of 3¼ lb.; and 10 revolutions being ſuffered to elapſe, the ſucceeding 20 were performed in 21½″. Then the globe being taken off, and a thin plate of lead, equal to it in weight, placed in its room; it was found, that inſtead of 3¼ lb. a weight of one pound would make it revolve in leſs time than it did before; performing now 20 revolutions after 10 were elapſed in the ſpace of 19″.

" Hence then it follows, that from the 3¼ lb. firſt hung on, there is leſs than 1 lb. to be deducted for the reſiſtance on the arm; and conſequently the reſiſtance on the globe itſelf is not leſs than the effort of 2¼ lb. in the ſituation M; and it appearing from the former meaſures, that the radius of the barrel is nearly $\frac{1}{50}$ of the radius of the circle, deſcribed by the centre of the globe; it follows, that the abſolute reſiſtance of the globe, when it revolves 20 times in 21½″, (about 25 feet in a ſecond), is not leſs than the 50th part of two pounds and a quarter, or of 36 ounces; and this being conſiderably more than half an ounce, and the globe nearly the ſize of a twelve-pound ſhot, it irrefragably confirms a propoſition I had formerly laid down from theory, that the reſiſtance of the air to a 12 lb. iron ſhot, moving with a velocity of 25 feet in a ſecond, is not leſs than half an ounce.

" The reſt of the experiments were made in order to confirm another propoſition, namely, that the reſiſtance of the air within certain limits is nearly in the duplicate proportion of the velocity of the reſiſted body. To inveſtigate this point, there were ſucceſſively hung on at M, weights in the proportion of the numbers 1, 4, 9, 16; and letting 10 revolutions firſt elapſe, the following obſervations were made on the reſt.—With ½ lb. the globe went 20 turns in 54½″, with 2 lb. it went 20 turns in 27¾″, with 4½ lb. it went 30 turns in 27½, and with 8 lb. it went 40 turns in 27½.—Hence it appears, that no reſiſtances proportioned to the numbers 1, 4, 9, 16, there correſpond velocities of the reſiſted body in the proportion of the numbers 1, 2, 3, 4; which proves, with great nicety, the propoſition abovementioned.

" With regard to the rotatory motion, the firſt experiment was to evince, that the whirling motion of a ball combining with its progreſſive motion would produce ſuch an oblique reſiſtance and deflective power as already mentioned. For this purpoſe a wooden ball of 4½ inches diameter was ſuſpended by a double ſtring, about eight or nine feet long. Now, by turning round the ball and twiſting the double ſtring, the ball when left to itſelf would have a revolving motion given it from the untwiſting of the ſtring again. And if, when the ſtring was twiſted, the ball was drawn to a conſiderable diſtance from the perpendicular, and there let go; it would at firſt, before it had acquired its revolving motion, vibrate ſteadily enough in the ſame vertical plane in which it firſt began to move: but when, by the untwiſting of the ſtring, it had acquired a ſufficient degree of its whirling motion, it conſtantly deflected to the right or left of its firſt tract; and ſometimes proceeded ſo far as to have its direction at right angles to that in which it began its motion; and this deviation was not produced by the ſtring itſelf, but appeared to be entirely owing to the reſiſtance being greater on the one part of the leading ſurface of the globe than the other. For the deviation continued when the ſtring was totally untwiſted; and even during the time that the ſtring, by the motion the globe had received, was twiſting the contrary way. And it was always eaſy to predict, before the ball was let go, which way it would deflect, only by conſidering on which ſide the whirl would be combined with the progreſſive motion; for on that ſide always the deflective power acted, as the reſiſtance was greater here than on the ſide where the whirl and progreſſive motion were oppoſed to one another."

Though Mr Robins conſidered this experiment as an inconteſtable proof of the truth of his theory, he undertook to give ocular demonſtration of this deflection of muſket-bullets even in the ſhort ſpace of 100 yards.

" As all projectiles," ſays he, " in their flight, are acted upon by the power of gravity, the deflection of a bullet from its primary direction, ſuppoſes that deflection to be upwards or downwards in a vertical plane; becauſe, in the vertical plane, the action of gravity is compounded and entangled with the deflective force. And for this reaſon my experiments have been principally directed to the examination of that deflection which carries the bullet to the right or left of that plane in which it began to move. For if it appears at any time that the bullet has ſhifted from that vertical plane in which the motion began, this will be an inconteſtable proof of what we have advanced.—Now, by means of ſcreens of exceeding thin paper, placed parallel to each other at proper diſtances, this deflection in queſtion may be many ways inveſtigated. For by firing bullets which ſhall traverſe the ſcreens, the flight of the bullet may be traced; and it may eaſily appear whether they do or do not keep invariably to one vertical plane. This examination may proceed on three different principles, which I ſhall here ſeparately explain.

" For firſt, an exactly vertical plane may be traced out upon all theſe ſcreens, by which the deviation of any ſingle bullet may be more readily inveſtigated, only by meaſuring the horizontal diſtance of its trace from the vertical plane thus delineated; and by this means the abſolute quantity of its aberration may be known. Or if the deſcription of ſuch a vertical plane ſhould be eſteemed a matter of difficulty and nicety, a ſecond method may be followed; which is that of reſting the piece in ſome fixed notch or ſocket, ſo that though the piece may have ſome little play to the right and left, yet all the lines in which the bullet can be directed ſhall interſect each other in the centre of that fixed ſocket: by this means, if two different ſhot are fired from the piece thus ſituated, the horizontal diſtances made by the two bullets on any two ſcreens ought to be in the ſame proportion to each other as the reſpective diſtances of the ſcreens from the ſocket in which the piece was laid. And if theſe horizontal diſtances differ from that proportion, then it is certain that one of the ſhot at leaſt hath deviated from a vertical plane, although the abſolute quantity of that deviation cannot hence be aſſigned; becauſe it cannot be known what part of it is to be imputed to one bullet, and what to the other.

“ But if the conſtant and invariable poſition of the notch or ſocket in which the piece was placed, be thought too hard an hypotheſis in this very nice affair; the third method, and which is the ſimpleſt of all, requires no more than that two ſhot be fired through three ſcreens without any regard to the poſition of the piece each time; for in this caſe, if the ſhots diverge from each other, and both keep to a vertical plane, then if the horizontal diſtances of their traces on the firſt ſcreen be taken from the like horizontal diſtances on the ſecond and third, the two remainders will be in the ſame proportion with the diſtances of the ſecond and third ſcreen from the firſt. And if they are not in this proportion, then it will be certain that one of them at leaſt hath been deflected from the vertical plane; though here, as in the laſt caſe, the quantity of that deflection in each will not be known.

31 Remarkable deviations of bullets to the right and left.

“ All theſe three methods I have myſelf made uſe of at different times, and have ever found the ſucceſs agreeable to my expectation. But the moſt eligible method ſeemed to be a compound of the two laſt. The apparatus was as follows.---Two ſcreens were ſet up in the larger walk in the charter-houſe garden; the firſt of them at 251 feet diſtance from the wall, which was to ſerve for a third ſcreen; and the ſecond 200 feet from the ſame wall. At 50 feet before the firſt ſcreen, or at 300 feet from the wall, there was placed a large block weighing about 200 lb. weight, and having fixed into it an iron bar with a ſocket at its extremity, in which the piece was to be laid. The piece itſelf was of a common length, and bored for an ounce ball. It was each time loaded with a ball of 17 to the pound, ſo that the windage was extremely ſmall, and with a quarter of an ounce of good powder. The ſcreens were made of the thinneſt iſſue paper; and the reſiſtance they gave to the bullet (and conſequently their probability of deflecting it) was ſo ſmall, that a bullet lighting one time near the extremity of one of the ſcreens, left a fine thin fragment of it towards the edge entire, which was ſo very weak that it was difficult to handle it without breaking. Theſe things thus prepared, five ſhot were made with the piece reſted in the notch abovementioned; and the horizontal diſtances between the firſt ſhort, which was taken as a ſtandard, and the four ſucceeding ones, both on the firſt and ſecond ſcreen and on the wall, and meaſured in inches, were as follows:

	1ſt Screen	2d Screen.	Wall.
1 to 2	1,75 R.	3,15 R.	16,7 R.
3	10 L.	15,6 L.	69 25 L.
4	1,25 L.	4,5 L.	15,0 L.
5	2,15 L.	5,1 L.	19,0 L.

“ Here the letters R and L, denote that the ſhot in queſtion went either to the right or left of the firſt.

“ If the poſition of the ſocket in which the piece was placed be ſuppoſed fixed, then the horizontal diſtances meaſured above on the firſt and ſecond ſcreen, and on the wall, ought to be in proportion to the diſtances of the firſt ſcreen, the ſecond ſcreen, and the wall from the ſocket. But by only looking over theſe numbers, it appears, that none of them are in that proportion; the horizontal diſtance of the firſt and third, for inſtance, on the wall being above nine inches more than it ſhould be by this analogy.

“ If, without ſuppoſing the invariable poſition of the ſocket, we examine the comparative horizontal diſtances according to the third method deſcribed above, we ſhall in this caſe diſcover divarications ſtill more extraordinary; for, by the numbers ſet down, it appears, that the horizontal diſtances of the ſecond and third ſhot on the two ſcreens, and on the wall, are as under.

1ſt Screen.	2d Screen.	Wall.
11.75	18.75	83.95

Here, if, according to the rule given above, the diſtance on the firſt ſcreen be taken from the diſtances on the other two, the remainder will be 7, and 74.2: and theſe numbers, if each ſhot kept to a vertical plane, ought to be in the proportion of 1 to 5; that being the proportion of the diſtances of the ſecond ſcreen, and of the wall from the firſt: but the laſt number 74.2 exceeds what it ought to be by this analogy by 39.2; ſo that between them there is a deviation from the vertical plane of above 39 inches, and this too in a tranſit of little more than 80 yards.

“ But farther, to ſhow that theſe irregularities do not depend on any accidental circumſtance of the balls fitting or not fitting the piece, there were five ſhots more made with the ſame quantity of powder as before, but with ſmaller bullets, which ran much looſer in the piece. And the horizontal diſtances being meaſured in inches from the trace of the firſt bullet to each of the ſucceeding ones, the numbers were as under.

	1ſt Screen.	2d Screen.	Wall.
1 to 2	15.6 R.	31.1 R.	94.0 R.
3	6.4 L.	12.75 L.	23.0 L.
4	4.7 R.	8.5 R.	15.5 R.
5	12 6 R.	24 0 R.	63.5 R.

Here, again, on the ſuppoſed fixed poſition of the piece, the harizontal diſtance on the wall between the firſt and third will be found above 15 inches leſs than it ſhould be if each kept to a vertical plane; and like irregularities, though ſmaller, occur in every other experiment. And if they are examined according to the third method ſet down above, and the horizontal diſtances of the third and fourth, for inſtance, are compared, thoſe on the firſt and ſecond ſcreen, and on the wall, appear to be thus.

1ſt Screen.	2d Screen.	Wall.
11.1	21.25	38.5

And if the horizontal diſtance on the firſt ſcreen be taken from the other two, the remainders will be 10.15, and 27.4; where the leaſt of them, inſtead of being five times the firſt, as it ought to be, is 23.35 ſhort of it; ſo that here is a deviation of 23 inches.

“ From all theſe experiments, the deflection in queſtion ſeems to be inconteſtably evinced. But to give ſome farther light to this ſubject, I took a barrel of the ſame bore with that hitherto uſed; and bent it at about three or four inches from its muzzle to the left, the bend making an angle of three or four degrees with the axis of the piece. This piece thus bent was fired with a looſe ball, and the ſame quantity of powder hitherto uſed, the ſcreens of the laſt experiment being ſtill continued. It was natural to expect, that if this piece was pointed by the general direction of its axis, the ball would be canted to the left of that direction by the bend near its mouth. But as the bullet, in paſſing through the bent part, would, as I conceived, be forced to roll upon the right-hand ſide of the barrel, and thereby its left ſide would turn up againſt the air, and would increaſe the reſiſtance on that ſide; I predicted to the company then preſent, that if the axis on which the bullet whirled, did not ſhift its poſition after it was ſeparated from the piece; then, notwithſtanding the bent of the piece to the left, the bullet itſelf might be expected to incurvate towards the right; and this, upon trial, did moſt remarkably happen. For one of the bullets fired from this bent piece paſſed through the firſt ſcreen about 1½ inch diſtant from the trace of one of the ſhot fired from the ſtraight piece in the laſt ſet of experiments. On the ſecond ſcreen, the traces of the ſame bullets were about three inches diſtant; the bullet from the crooked piece paſſing on both ſcreens to the left of the other: but comparing the place of theſe bullets on the wall, it appeared that the bullet from the crooked piece, though it diverged from the track on the two ſcreens, had now croſſed that track, and was deflected conſiderably to the right of it; ſo that it was obvious, that though the bullet from the crooked piece might firſt be canted to the left, and had diverged from the track of the other bullet with which it was compared, yet by degrees it deviated again to the right, and a little beyond the ſecond ſcreen croſſed that track from which it before diverged, and on the wall was deflected 14 inches, as I remember, on the contrary ſide. And this experiment is not only the moſt convincing proof of the reality of this deflection here contended for; but is likewiſe the ſtrongeſt confirmation that it is brought about in the very manner and by the very circumſtances which we have all along deſcribed.

" I have now only to add, that as I ſuſpected the conſideration of the revolving motion of the bullet, compounded with its progreſſive one, might be conſidered as a ſubject of mathematical ſpeculation, and that the reality of any deflecting force thence ariſing might perhaps be denied by ſome computiſts upon the principles hitherto received of the action of fluids; I thought proper to annex a few experiments, with a view of evincing the ſtrange deficiency of all theories of this ſort hitherto eſtabliſhed, and the unexpected and wonderful varieties which occur in theſe matters. The propoſition which I advanced for this purpoſe being, That two equal ſurfaces meeting the air with the ſame degree of obliquity, may be ſo differently reſiſted, that though in one of them the reſiſtance is leſs than that of a perpendicular ſurface meeting the ſame quantity of air, yet in another it ſhall be conſiderably greater.

32
Strange anomaly in the reſiſtance of the air.

" To make out this propoſition, I made uſe of the machine already deſcribed: and having prepared a paſteboard pyramid, whoſe baſe was four inches ſquare, and whoſe planes made angles of 45° with the plane of its baſe; and alſo a parallelogram four inches in breadth, and 5⅞ in length, which was equal to the ſurface of the pyramid, the globe P was taken off from the machine, and the pyramid was firſt fixed on; and 2 lb. being hung at M, and the pyramid ſo fitted as to move with its vertex forwards, it performed 20 revolutions after the firſt ten were elapſed in 33″. Then the pyramid being turned, ſo that its baſe, which was a plane of four inches ſquare, went foremoſt, it now performed 20 revolutions with the ſame weight in 38¼″.—After this, taking off the pyramid, and fixing on the parallelogram with its longer ſide perpendicular to the arm, and placing its ſurface in an angle of 45° with the horizon by a quadrant, the parallelogram, with the ſame weight, performed 20 revolutions in 43½″.

" Now here this parallelogram and the ſurface of the pyramid are equal to each other, and each of them met the air in an angle of 45°; and yet one of them made 20 revolutions in 33″, whilſt the other took up 43¼. And at the ſame time it appears, that a flat ſurface, ſuch as a baſe of a pyramid, which meets the ſame quantity of air perpendicularly, makes 20 revolutions in 38¼″, which is the medium between the other two.

" But to give another and ſtill more ſimple proof of this principle; there was taken a parallelogram four inches broad and 8¼ long This being fixed at the end of the arm, with its long ſide perpendicular thereto, and being placed in an angle of 45° with the horizon, there was a weight hung on at M of 3½ lb. with which the parallelogram made 20 revolutions in 40¾″. But after this, the poſition of the parallelogram was ſhifted, and it was placed with its ſhorter ſide perpendicular to the arm, though its ſurface was ſtill inclined to an angle of 45° with the horizon; and now, inſtead of going ſlower, as might be expected from the greater extent of part of its ſurface from the axis of the machine, it went round much faſter: for in this laſt ſituation it made 20 revolutions in 35¾″, ſo that there were 5″ difference in the time of 20 revolutions; and this from no other change of circumſtance than as the larger or ſhorter ſide of the oblique plane was perpendicular to the line of its direction."

In the 73d volume of the Philoſophical Tranſactions, ſeveral experiments on this ſubject, but upon a larger ſcale, are related by Lovell Edgeworth, Eſq. They confirm the truth of what Mr Robins advances, but nothing is ſaid to explain the reaſon of it.

33
Why the art of gunnery can not become perfect.

Theſe are the principal experiments made by Mr Robins in confirmation of his theory, and which not only far exceed every thing that had been formerly done, but even bid fair for advancing the art of gunnery to its *ne plus ultra*. It muſt be obſerved, however, that in this art it is impoſſible we ſhould ever arrive at abſolute perfection; that is, it can never be expected that a gunner, by any method of calculation whatever, could be enabled to point his guns in ſuch a manner, that the ſhot would hit the mark if placed any where within its range. Aberrations, which can by no means be either foreſeen or prevented, will take place from a great number of different cauſes. A variation in the denſity of the atmoſphere, in the dampneſs of the powder, or in the figure of the ſhot, will cauſe variations in the range of the bullet, which cannot by any means be reduced to rules, and conſequently muſt render the event of each ſhot very precarious. The reſiſtance of the atmoſphere ſimply conſidered without any of thoſe anomalies ariſing from its denſity at different times, is a problem which, notwithſtanding the labours of Mr Robins and others, hath not been completely ſolved: and, indeed, if we conſider the matter in a phyſical light, we ſhall find, that without ſome other data than thoſe which are yet obtained, an exact ſolution of it is impoſſible.

34 The air acts as a moving power as well as a reſiſting one.

It is an objection that hath been made to the mathematical philoſophy, and to which in many caſes it is moſt certainly liable, that it conſiders the *reſiſtance* of matter more than its capacity of giving motion to other matter. Hence, if in any caſe matter acts both as a reſiſting and moving power, and the mathematician overlooks its effort towards motion, founding his demonſtrations only upon its property of reſiſting, theſe demonſtrations will certainly be falſe, though they ſhould be ſupported by all the powers of geometry. It is to an error of this kind we are to attribute the great differences already taken notice of between the calculations of Sir Iſaac Newton, with regard to the reſiſting force of fluids, and what actually takes place upon trial. Theſe calculations were made upon the ſuppoſition that the fluid through which a body moved could do nothing elſe but reſiſt it; yet it is certain, that the air (the fluid with which we have to do at preſent) proves a ſource of *motion*, as well as reſiſtance, to all bodies which move in it.

Plate CCXXV. fig. 5.

To underſtand this matter fully, let ABC repreſent a crooked tube made of any ſolid matter, and *a*, *b*, two piſtons which exactly fill the cavity. If the ſpace between theſe piſtons is full of air, it is plain they cannot come into contact with each other on account of the elaſticity of the included air, but will remain at ſome certain diſtance as repreſented in the figure. If the piſton *b* is drawn up, the air which preſſes in the direction C*b* acts as a reſiſting power, and the piſton will not be drawn up with ſuch eaſe as if the whole was *in vacuo*. But though the column of air preſſing in the direction C*b* acts as a reſiſting power on the piſton *b*, the column preſſing in the direction A*a* will act as a moving power upon the piſton *a*. It is therefore plain, that if *b* is moved upwards till it comes to the place marked *d*, the other will deſcend to that marked *c*. Now, if we ſuppoſe the piſton *a* to be removed, it is plain, that when *b* is pulled upwards to *d*, the air deſcending through the leg A*a* CB will preſs on the under ſide of the piſton *b*, as ſtrongly as it would have done upon the upper ſide of the piſton *a*, had it been preſent. Therefore, though the air paſſing down through the leg CB reſiſts the motion of the piſton *b* when drawn upwards, the air preſſing down through the leg AB forwards it as much: and accordingly the piſton *b* may be drawn up or puſhed down at pleaſure, and with very little trouble. But if the orifice at A is ſtopped, ſo that the air can only exert its reſiſting power on the piſton *b*, it will require a conſiderable degree of ſtrength to move the piſton from *b* to *d*.

If now we ſuppoſe the tube to be entirely removed (which indeed anſwers no other purpoſe than to render the action of the air more evident), it is plain, that if the piſton is moved either up or down, or in any other direction we can imagine, the air preſſes as much upon the back part of it as it reſiſts it on the fore part; and of conſequence, a ball moving through the air with any degree of velocity, ought to be as much accelerated by the action of the air behind, as it is retarded by the action of that before.—Here then it is natural to aſk, If the air accelerates a moving body as much as it retards it, how comes it to make any reſiſtance at all? yet certain it is, that this fluid doth reſiſt, and that very conſiderably. To this it may be anſwered, that the air is always kept in ſome certain ſtate or conſtitution by another power which rules all its motions, and it is this power undoubtedly which gives the reſiſtance. It is not to our purpoſe at preſent to inquire what that power is; but we ſee that the air is often in very different ſtates: one day, for inſtance, its parts are violently agitated by a ſtorm; and another, perhaps, they are comparatively at reſt in a calm. In the firſt caſe, nobody heſitates to own, that the ſtorm is occaſioned by ſome cauſe or other, which violently reſiſts any other power that would prevent the agitation of the air. In a calm, the caſe is the ſame; for it would require the ſame exertion of power to excite a tempeſt in a calm day, as to allay a tempeſt in a ſtormy one. Now it is evident, that all projectiles, by their motion, agitate the atmoſphere in an unnatural manner; and conſequently are reſiſted by that power, whatever it is, which tends to reſtore the equilibrium, or bring back the atmoſphere to its former ſtate.

If no other power beſides that abovementioned acted upon projectiles, it is probable that all reſiſtance to their motion would be in the duplicate proportion of their velocities; and accordingly, as long as the velocity is ſmall, we find it generally is ſo. But when the velocity comes to be exceedingly great, other ſources of reſiſtance ariſe. One of theſe is a ſubtraction of part of the moving power; which though not properly a *reſiſtance*, oppoſing another power to it, is an equivalent thereto. This ſubtraction ariſes from the following cauſe. The air, as we have already obſerved, preſſes on the hinder part of the moving body by its gravity, as much as it reſiſts the forepart of it by the ſame property. Nevertheleſs, the velocity with which the air preſſes upon any body by means of its gravity, is limited; and it is poſſible that a body may change its place with ſo great velocity that the air hath not time to ruſh in upon the back part of it, in order to aſſiſt its progreſſive motion. When this happens to be the caſe, there is in the firſt place a deficiency of the moving power equivalent to 15 pounds on every ſquare inch of ſurface; at the ſame time that there is a poſitive reſiſtance of as much more on the forepart, owing to the gravity of the atmoſphere, which muſt be overcome before the body can move forward.

This deficiency of moving power, and increaſe of reſiſtance, do not only take place when the body moves with a very great degree of velocity, but in all motions whatever. It is not in all caſes perceptible, becauſe the velocity with which the body moves, frequently bears but a very ſmall proportion to the velocity with which the air preſſes in behind it. Thus, ſuppoſing the velocity with which the air ruſhes into a vacuum to be 1200 feet in a ſecond, if a body moves with a velocity of 20, 40, or 50 feet in a ſecond, the force with which the air preſſes on the back part is but $\frac{1}{15}$ at the utmoſt leſs than that which reſiſts on the forepart of it, which will not be perceptible ; but if, as in the caſe of bullets, the velocity of the projectile comes to have a conſiderable proportion to the velocity wherewith the air ruſhes in behind it ; then a very perceptible and otherwiſe unaccountable reſiſtance is obſerved, as we have ſeen in the experiments already related by Mr Robins. Thus, if the air preſſes in with a velocity of 1200 feet in a ſecond, if the body changes its place with a velocity of 600 feet in the ſame time, there is a reſiſtance of 15 pounds on the fore part, and a preſſure of only $7\frac{1}{2}$ on the back part. The reſiſtance therefore not only overcomes the moving power of the air by $7\frac{1}{2}$ pounds, but there is a deficiency of other $7\frac{1}{2}$ pounds owing to the want of half the preſſure of the atmoſphere on the back part, and thus the whole loſs of the moving power is equivalent to 15 pounds ; and hence the exceeding great increaſe of reſiſtance obſerved by Mr Robins beyond what it it ought to be according to the common computations.—The velocity with which the air ruſhes into a vacuum is therefore a deſideratum in gunnery. Mr Robins ſuppoſes that it is the ſame with the velocity of ſound ; and that when a bullet moves with a velocity greater than that of 1200 feet in a ſecond, it leaves a perfect vacuum behind it. Hence he accounts for the great increaſe of reſiſtance to bullets moving with ſuch velocities ; but as he doth not take notice of the loſs of the air's moving power, the anomalies of all leſſer velocities are inexplicable on his principles. Nay, he even tells us, that Sir Iſaac Newton's rule for computing reſiſtances may be applied in all velocities leſs than 1100 or 1200 feet in a ſecond, though this is expreſsly contradicted by his own experiments mentioned n° 23.

35
It reſiſts by its elaſticity as well as gravity.

Though for theſe reaſons it is evident how great difficulties muſt occur in attempting to calculate the reſiſtance of the air to military projectiles, we have not even yet diſcovered all the ſources of reſiſtance to theſe bodies when moving with immenſe velocities. Another power by which they are oppoſed (and which at laſt becomes greater than any of thoſe hitherto mentioned), is the air's elaſticity. This, however, will not begin to ſhow itſelf in the way of reſiſtance till the velocity of the moving body becomes conſiderably greater than that by which the air preſſes into a vacuum. Having therefore firſt aſcertained this velocity, which we ſhall ſuppoſe be 1200 feet in a ſecond, it is plain, that if a body moves with a velocity of 1800 feet in a ſecond, it muſt compreſs the air before it ; becauſe the fluid hath neither time to expand itſelf in order to fill the vacuum left behind the moving body, nor to ruſh in by its gravity. This compreſſion it will reſiſt by its elaſtic power, which thus become a new ſource of reſiſtance, increaſing without any limit, in proportion to the velocity of the moving body. If now we ſuppoſe the moving body to ſet out with a velocity of 2400 feet in a ſecond, it is plain that there is not only a vacuum left behind the body, but the air before it is compreſſed into half its natural ſpace. The loſs of motion in the projectile therefore is now very conſiderable. It firſt loſes 15 pounds on every ſquare inch of ſurface on account of the deficiency of the moving power of the air behind it ; then it loſes 15 pounds more on account of the reſiſtance of the air before it ; again it loſes 15 pounds on account of the elaſticity of the compreſſed air ; and laſtly another 15 pounds on account of the vacuum behind which takes off the weight of the atmoſphere, that would have been equivalent to one half of the elaſticity of the air before it. The whole reſiſtance therefore upon every ſquare inch of ſurface moving with this velocity is 60 pounds, beſides that which ariſes from the power tending to preſerve the general ſtate of the atmoſphere, and which increaſes in the duplicate proportion of the velocity as already mentioned. If the body is ſuppoſed to move with a velocity of 4800 feet in a ſecond, the reſiſtance from the air's elaſticity will then be quadrupled, or amount to 60 pounds on the ſquare inch of ſurface ; which added to the other cauſes, produces a reſiſtance of 105 pounds upon the ſquare inch ; and thus would the reſiſtance from the elaſticity of the air go on continually increaſing, till at laſt the motion of the projectile would be as effectually ſtopped as if it was fired againſt a wall. This obſtacle therefore we are to conſider as really *inſuperable* by any art whatever, and therefore it is not adviſable to uſe larger charges of powder than what will project the ſhot with a velocity of 1200 feet in a ſecond. To this velocity the elaſticity of the air will not make great reſiſtance, if indeed it do make any at all : for though Mr Robins hath conjectured that air ruſhes into a vacuum with the velocity of ſound, or between 11 and 1200 feet in a ſecond ; yet we have no deciſive proof of the truth of this ſuppoſition. At this velocity indeed, according to Mr Robins a very ſudden increaſe of reſiſtance takes place : but this is denied by Mr Glenie *, who ſuppoſes that the reſiſtance proceeds gradually ; and indeed it ſeems to be pretty obvious, that the reſiſtance cannot very *ſuddenly* increaſe, if the velocity is only increaſed in a ſmall degree. Yet it is certain, that the ſwifteſt motions with which cannon-balls can be projected are very ſoon reduced to this ſtandard ; for Mr Robins acquaints us, that "a 24-pound ſhot, when diſcharged with a velocity of 2000 feet in a ſecond, will be reduced to that of 1200 feet in a ſecond in a flight of little more than 500 yards."

* *Hiſt. of Gunnery*, p. 48, 50.

In the 71ſt volume of the Philoſophical Tranſactions, Mr Thomſon has propoſed a new method of determining the velocities of bullets, by meaſuring the force of the recoil of the piece. As in all caſes action and re-action are ſuppoſed to be equal to one another, it appears that the momentum of a gun, or the force of its recoil backwards, muſt always be equivalent to the force of its charge ; that is, the velocity with which the gun recoils, multiplied into its weight, is equal to the velocity of the bullet multiplied into its weight ; for every particle of matter, whether ſolid or fluid, that iſſues out of the mouth of a piece muſt be impelled by the action of ſome power, which power muſt *re-act* with equal force againſt the bottom of the bore.—Even the fine inviſible elaſtic fluid that is generated from the powder in its inflammation, cannot put itſelf in motion without reacting againſt the gun at the ſame time. Thus we ſee pieces, when they are fired with powder alone, recoil as well as when their charges are made to impel a weight of ſhot, though the recoil is not in the ſame degree in both caſes. It is eaſy to determine the velocity of the recoil in any given caſe, by ſuſpending the gun in an horizontal poſition by two pendulous rods, and meaſuring the arc of its aſcent by means of a ribbon, as mentioned under the article GUNPOWDER; and this will give the momentum of the gun, its weight being known, and conſequently the momentum of its charge. But in order to determine the velocity of the bullet from the momentum of the recoil, it will be neceſſary to know how much the weight and velocity of the elaſtic fluid contributes to it.

"That part of the recoil which ariſes from the expanſion of the fluid is always very nearly the ſame whether the powder is fired alone, or whether the charge is made to impel one or more bullets, as has been determined by a great variety of experiments.—If therefore a gun, ſuſpended according to the method preſcribed, is fired with any given charge of powder, but without any bullet or wad, and the recoil is obſerved, and if the ſame piece is afterwards fired with the ſame quantity of powder, and a bullet of a known weight, the exceſs of the velocity of the recoil in the latter caſe, over that in the former, will be proportional to the velocity of the bullet; for the difference of theſe velocities, multiplied into the weight of the gun, will be equal to the weight of the bullet multiplied into its velocity.—Thus, if W is put equal to the weight of the gun, U = the velocity of the bullet when fired with a given charge of powder without any bullet; V = the velocity of the recoil, when the ſame charge is made to impel a bullet; B = the weight of the bullet, and v = its velocity; it will be $v = \frac{\overline{V-U}+W}{B}$."

To determine how far this theory agreed with practice, an experiment was made with a charge of 165 grains of powder without any bullet, which produced a recoil of 5.5 inches; and in another, with a bullet, the recoil was 5.6 inches; the mean of which is 5.55 inches; anſwering to a velocity of 1.1358 feet in a ſecond. In five experiments with the ſame charge of powder, and a bullet weighing 580 grains, the mean was 14.6 inches; and the velocity of the recoil anſwering to the length juſt mentioned, is 2.9880 feet in a ſecond: conſequently $V-U$, or $2.9880-1.1358$, is equal to 1.8522 feet in a ſecond. But as the velocities of recoil are known to be as the cords of the arcs through which the barrel aſcends, it is not neceſſary, in order to determine the velocity of the bullet, to compute the velocities V and U; but the quantity $V-U$, or the difference of the velocities of the recoil when the given charge is fired with and without a bullet, may be computed from the value of the difference of the chords by one operation.—Thus the velocity anſwering to the chord 9.05, is that of 1.8522 feet in a ſecond, is juſt equal to $V-U$, as was before found.

In this experiment the weight of the barrel with its carriage was juſt $47\frac{1}{4}$ pounds, to which $\frac{3}{4}$ of a pound were to be added on account of the weight of the rods by which it was ſuſpended; which makes $W=48$ pounds, or 336,000 grains. The weight of the bullet was 580 grains; whence B is to W as 580 to 336,000; that is, as 1 to 579.31 very nearly. The value of $V-U$, anſwering to the experiments before mentioned, was found to be 1.8522, conſequently the velocity of the bullets $=v$, was $1.8522+579.31=1073$ feet, which differs only by 10 from 1083, the velocities found by the pendulum.

The velocities of the bullets may be found from the recoil by a ſtill more ſimple method; for the velocities of the recoil being as the chords meaſured upon the ribbon, if c is put equal to the chord of the recoil expreſſed in Engliſh inches, when the piece is fired with powder only, and C = the chord when the ſame piece is charged with a bullet: then $C-c$ will be as $V-U$; and conſequently as $\frac{\overline{V-U}+W}{B}$ which meaſures the velocity of the bullet, the ratio of W to B remaining the ſame.—If therefore we ſuppoſe a caſe in which $C-c$ is equal to one inch, and the velocity of the bullet is computed from that chord, the velocity in any other caſe, wherein $C-c$ is greater or leſs than one inch, will be found by multiplying the difference of the chord C and c by the velocity that anſwers to the difference of one inch.—The length of the parallel rods by which the piece was ſuſpended being 64 inches, the velocity of the recoil, $=C-c$ 1 inch meaſured upon the ribbon, is 0.204655 parts of a foot in one ſecond; which in this caſe is alſo the value of $V-U$: the velocity of the bullet, or v, is therefore $0.204655+579.31=118.35$ feet in a ſecond. Hence the velocity of the bullet may in all caſes be found by multiplying the difference of the cords C and c by 118.35; the weight of the barrel, the length of the rods by which it is ſuſpended, and the weight of the bullet remaining the ſame; and this whatever the charge of powder made uſe of may be, and however it may differ in ſtrength and goodneſs.

The exactneſs of this ſecond method will appear from the following experiments. On firing the piece with 145 grains of powder and a bullet, the mean of three ſets of experiments was 13.25, 13.15, and 13.2; and with the ſame charge of powder without a bullet, the recoil was 4.5, 4.3, or 4.4: $C-c$ therefore was $13.2-4.4=8.8$ inches; and the velocity of the bullets $=8.8+118.35=1045$ feet in a ſecond; the velocities by the pendulum coming out 10.40 feet in the ſame ſpace of time.

In the far greateſt number of experiments to determine the comparative accuracy of the two methods, a ſurpriſing agreement was found betwixt the laſt mentioned one and that by the pendulum; but in ſome few the differences were very remarkable. Thus, in two where the recoil was 12.92, and 13.28 the velocity, by computation from the chords is 1030 feet per ſecond; but in computing by the pendulum it amounted only to 900; but in theſe ſome inaccuracy was ſuſpected in the experiment with the pendulum, and that the computation from the recoil was moſt to be depended upon. In another experiment, the velocity by the recoil exceeded that by the pendulum by no leſs than 346 feet: the former ſhowing 2109, and the latter only 1763 feet in a ſecond. In two others the pendulum was alſo deficient, though not in ſuch a degree. In all theſe it is remarkable, that where the difference was conſiderable, it was ſtill in favour of the recoil. The deficiency in theſe experiments appears to have been ſomewhat embaraſſing to our author. "It cannot be ſuppoſed, ſays he, that it aroſe from any imperfection in Mr Robin's method of determining the velocities of bullets; for that method is founded upon ſuch principles as leave no room to doubt of its accuracy; and the practical errors that occur in making the experiments, and which cannot be entirely prevented, or exactly compenſated, are in general ſo ſmall, that the difference in the velocities cannot be attributed to them. It is true the effect of thoſe errors is more likely to appear in experiments made under ſuch circumſtances as the preſent; for the bullet being very light (A), the arc of the aſcent of the pendulum was but ſmall; and a ſmall miſtake in meaſuring the chord upon the ribbon would have produced a very conſiderable error in computing the velocity of the bullet: Thus a difference of one-tenth of an inch, more or leſs, upon the ribbon, in that experiment where the difference was greateſt would have made a difference in the velocity of more than 120 feet in a ſecond. But, independent of the pains that were taken to prevent miſtakes, the ſtriking agreement of the velocities in ſo many other experiments, affords abundant reaſon to conclude, that the errors ariſing from thoſe cauſes were in no caſe very conſiderable.—But if both methods of determining the velocities of bullets are to be relied on, then the difference of the velocities, as determined by them in theſe experiments, can only be accounted for by ſuppoſing that it aroſe from their having been determined by the reſiſtance of the air in the paſſage of the bullets from the mouth of the piece to the pendulum: and this ſuſpicion will be much ſtrengthened when we conſider how great the reſiſtance of the air is to bodies that move very ſwiftly in it; and that the bullets in theſe experiments were not only projected with great velocities, but were alſo very light, and conſequently more liable to be retarded by the reſiſtance on that account.

"To put the matter beyond all doubt, let us ſee what the reſiſtance was that theſe bullets met with, and how much their velocities were diminiſhed by it. The weight of the bullet in the moſt erroneous experiment was 90 grains; its diameter 0.78 of an inch; and it was projected with a velocity of 2109 feet in a ſecond. If now a computation be made according to the law laid down by Sir Iſaac Newton for compreſſed fluids, it will be found that the reſiſtance to this bullet was not leſs than 8½ pounds avoirdupoiſe, which is ſomething more than 660 times its own weight. But Mr Robins has ſhown by experiment, that the reſiſtance of the air to bodies moving in it with very great velocity, is near three times greater than Sir Iſaac has determined it; and as the velocity with which this bullet was impelled is conſiderably greater than any in Mr Robins's experiments, it is highly probable, that the reſiſtance in this inſtance was at leaſt 2000 times greater than the weight of the bullet.

"The diſtance from the mouth of the piece to the pendulum was 12 feet; but, as there is reaſon to think that the blaſt of the powder, which always follows the bullet, continues to act upon it for ſome ſenſible ſpace of time after it is out of the bore, and, by urging it on, counterbalances, or at leaſt counteracts in a great meaſure, the reſiſtance of the air, we will ſuppoſe that the reſiſtance does not begin, or rather that the motion of the bullet does not begin to be retarded, till it has got to the diſtance of two feet from the muzzle. The diſtance, therefore, between the barrel and the pendulum, inſtead of 12 feet, is to be eſtimated at 10 feet; and as the bullet took up about $\frac{1}{193}$ part of a ſecond in running over the ſpace, it muſt in that time have loſt a velocity of about 335 feet in a ſecond, as will appear upon making the computation; and this will very exactly account for the apparent diminution of the velocity in the experiment: for the difference of the velocities, as determined by the recoil and the pendulum $= 2109 - 1763 = 346$ feet in a ſecond, is extremely near 335 feet in a ſecond, the diminution of the velocity by the reſiſtance as here determined.

"If the diminution of the velocities of the bullets in the two ſubſequent experiments be computed in like manner, it will turn out in one 65, and in the other 33, feet in a ſecond: and, making theſe corrections, the compariſon of the two methods of aſcertaining the velocitieswill ſtand thus:

Velocities by the pendulum,	1763	1317	1136
Reſiſtance of air to be added,	355	65	33
	2098	1382	1169
Velocity by the recoil,	2109	1430	1288
Difference after correction,	+11	+48	+119

"It appears therefore, that notwithſtanding theſe corrections, the velocities as determined by the pendulum, particularly in the laſt, were conſiderably deficient. But the manifeſt irregularity of the velocities, in thoſe inſtances, affords abundant reaſon to conclude, that it muſt have ariſen from ſome accidental cauſe, and therefore that little dependence is to be put upon the reſult of thoſe experiments. I cannot take upon me to determine poſitively what the cauſe was which produced this irregularity, but I ſtrongly ſuſpect that it aroſe from the breaking of the bullets in the barrel by the force of the exploſion: for theſe bullets as has already been mentioned, were formed of lead, incloſing leſſer bullets of plaſter of Paris; and I well remember to have obſerved at that time ſeveral ſmall fragments of the plaſter which had fallen down by the ſide of the pendulum. I confeſs I did not then pay much attention to this circumſtance, as I naturally concluded that it aroſe from the breaking of the bullet in penetrating the target of the pendulum; and that the ſmall pieces of plaſter I ſaw upon the ground, had fallen out of the hole by which the bullet entered. But if the bullets were not abſolutely broken in pieces in firing, yet if they were conſiderably bruiſed, and the plaſter, or a part of it, were ſeparated from the lead, ſuch a change in the form might produce a great increaſe in the reſiſtance, and even their initial velocities might be affected by it; for their form being changed from that of a globe to ſome other figure, they might not fit the bore; and a part of the force of the charge might be loſt by the windage.—That this actually happened in the experiment laſt mentioned, ſeems very probable; as the velocity with which the bullet was projected, as it was determined by the recoil, was conſiderably leſs in proportion in that experiment than in many others which preceded and followed it in the ſame ſet.

"As allowance has been made for the reſiſtance of the air in theſe caſes, it may be expected that the ſame ſhould

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(A) They were made of lead incloſing a nucleus of Paris plaſter.

ſhould be done in all other caſes : but it will probably appear, upon inquiry, that the diminution of the velocities of the bullets, on that account, was ſo inconſiderable, that it might ſafely be neglected: thus, for inſtance, in the experiments with an ounce of powder, when the velocity of the bullet was more than 1750 feet in a ſecond, the diminution turns out no more than 25 or 30 feet in a ſecond, though we ſuppoſe the full reſiſtance to have been ſo near as two feet from the mouth of the piece ; and in all caſes where the velocity was leſs, the effect of the reſiſtance was leſs in a much greater proportion : and even in this inſtance, there is reaſon to think, that the diminution of the velocity, as we have determined it, is too great ; for the flame of gunpowder expands with ſuch amazing rapidity, that it is ſcarcely to be ſuppoſed but that it follows the bullet, and continues to act upon it more than two feet, or even four feet, from the gun ; and when the velocity of the bullet is leſs, its action upon it muſt be ſenſible at a ſtill greater diſtance."

As this method of determining the velocities of bullets by the recoil of the piece did not occur to Mr Thomſon till after he had finiſhed his experiments with a pendulum, and taken down his apparatus, he had it not in his power to determine the comparative ſtrength of the recoil without and with a bullet; and conſequently the velocity with which the flame iſſues from the mouth of a piece. He is of opinion, however, that every thing relative to theſe matters may be determined with greater accuracy by the new method than by any other formerly practiſed ; and he very juſtly remarks, that the method of determining the velocity by the recoil, gives it originally as the bullet ſets out ; while that by the pendulum ſhows it only after a part has been deſtroyed by the reſiſtance of the air. In the courſe of his remarks, he criticiſes upon a part of Mr Robins's theory, that when bullets of the ſame diameter, but different weight, are diſcharged from the ſame piece by the ſame quantity of powder, their velocities are in a ſub-duplicate ratio of their weight. This theory, he obſerves, is manifeſtly defective, as being founded upon a ſuppoſition, that the action of the elaſtic fluid, generated from the powder, is always the ſame in any and every given part of the bore when the charge is the ſame, whatever may be the weight of the bullet ; and as no allowance is made for the expenditure of force required to put the fluid itſelf in motion, nor for the loſs of it by the vent. "It is true (ſays he) Dr Hutton in his experiments found this law to obtain without any great error ; and poſſibly it may hold good with ſufficient accuracy in many caſes ; for it ſometimes happens, that a number of errors or actions, whoſe operations have a contrary tendency, ſo compenſate each other, that their effects when united are not ſenſible. But when this is the caſe, if any one of the cauſes of error is removed, thoſe which remain will be detected.—When any given charge is loaded with a heavy bullet, more of the powder is inflamed in any very ſhort ſpace of time than when the bullet is lighter, and the action of the powder ought upon that account to be greater ; but a heavy bullet takes up longer time in paſſing through the bore than a light one ; and conſequently more of the elaſtic fluid generated from the powder eſcapes by the vent and by windage. It may happen that the augmentation of the force, on account of one of theſe circumſtances, may be juſt able to counterbalance the diminution of it ariſing from the other, and if it ſhould be found upon trial, that this is the caſe in general, in pieces as they are now conſtructed, and with all the variety of ſhot that are made uſe of in practice, it would be of great uſe to know the fact : but when, with Mr Robins, concluding too haſtily from the reſult of a partial experiment, we ſuppoſe, that becauſe the ſum total of the preſſure of the elaſtic fluid upon the bullet, during the time of its paſſage through the bore, happens to be the ſame when bullets of different weights are made uſe of, that therefore it is always ſo, our reaſonings may prove very inconcluſive, and lead to very dangerous errors."

In the proſecution of this ſubject Mr Thomſon proves mathematically, as well as by actual experiment, that the theory laid down by Mr Robins in this reſpect is erroneous. The exceſs is in favour of heavy bullets, which acquire a velocity greater than they ought to do according to Mr Robins's rule ; and ſo conſiderable are the errors, that in one of Mr Thomſon's experiments, the difference was no leſs than 2042 feet in a ſecond. When the weight of the bullet was increaſed four times, the action of the powder was found to be nearly doubled ; for in one experiment, when four bullets were diſcharged at once, the collective preſſure was as 1 ; but when only a ſingle bullet was made uſe of, it was no more than 0.5825 ; and on the whole he concludes, that the velocity of bullets is in the reciprocal ſub-triplicate ratio of their weights. Our author obſerves alſo, that Mr Robins is not only miſtaken in the particular juſt mentioned, but in his concluſion with regard to the abſolute force of gunpowder compared with the preſſure of the atmoſphere ; the latter being to the force of gunpowder as 1 to 1000 according to Mr Robins ; but as 1 to 1308 according to Mr Thomſon.

SECT. III. *Practice of Gunnery.*

WITH regard to the practical part of gunnery, which ought to conſiſt in directing the piece in ſuch a manner, as always to hit the object againſt which it is pointed, there can be no certain rules given. The following maxims are laid down by Mr Robins as of uſe in practice.

1. In any piece of artillery whatever, the greater the quantity of powder it is charged with, the greater will be the velocity of the bullet.

2. If two pieces of the ſame bore, but of different lengths, are fired with the ſame charge of powder, the longer will impel the bullet with a greater celerity than the ſhorter.

3. If two pieces of artillery different in weight, and formed of different metals, have yet their cylinders of equal bores and equal lengths ; then with like charges of powder and like bullets they will each of them diſcharge their ſhot with nearly the ſame degree of celerity.

4. The ranges of pieces at a given elevation are no juſt meaſures of the velocity of the ſhot ; for the ſame piece fired ſucceſſively at an invariable elevation, with the powder, bullet, and every other circumſtance as

nearly the ſame as poſſible, will yet range to very different diſtances.

5. The greateſt part of that uncertainty in the ranges of pieces which is deſcribed in the preceding maxim, can only ariſe from the reſiſtance of the air.

6. The reſiſtance of the air acts upon projectiles in a twofold manner: for it oppoſes their motion, and by that means continually diminiſhes their celerity; and it beſides diverts them from the regular track they would otherwiſe follow; whence ariſe thoſe deviations and inflections already treated of.

7. That action of the air by which it retards the motion of projectiles, though much neglected by writers on artillery, is yet in many inſtances, of an immenſe force; and hence the motion of theſe reſiſted bodies is totally different from what it would otherwiſe be.

8. This retarding force of the air acts with different degrees of violence, according as the projectile moves with a greater or leſſer velocity; and the reſiſtances obſerve this law. That to a velocity which is double another, the reſiſtance within certain limits is fourfold; to a treble velocity, ninefold; and ſo on.

9. But this proportion between the reſiſtances to two greater velocities, does not hold if one of the velocities be leſs than that of 1200 feet in a ſecond, and the other greater. For in this caſe the reſiſtance to the greater velocity is near three times as much as it would come out by a compariſon with the ſmaller, according to the law explained in the laſt maxim.

10. To the extraordinary power exerted by the reſiſtance of the air it is owing, that when two pieces of different bores are diſcharged at the ſame elevation, the piece of the largeſt bore uſually ranges fartheſt, provided they are both fired with fit bullets, and the cuſtomary allotment of powder.

11. The greateſt part of military projectiles will at the time of their diſcharge acquire a whirling motion round their axis by rubbing againſt the inſide of their reſpective pieces: and this whirling motion will cauſe them to ſtrike the air very differently from what they would do had they no other than a progreſſive motion. By this means it will happen, that the reſiſtance of the air will not always be directly oppoſed to their flight; but will frequently act in a line oblique to their courſe, and will thereby force them to deviate from the regular tract they would otherwiſe deſcribe. And this is the true cauſe of the irregularities deſcribed in maxim 4.

12. From the ſudden trebling the quantity of the air's reſiſtance, when the projectile moves ſwifter than at the rate of 1200 feet in a ſecond (as hath been explained in maxim 9). it follows that whatever be the regular range of a bullet diſcharged with this laſt mentioned velocity, that range will be but little increaſed how much ſoever the velocity of the bullet may be ſtill farther augmented by greater charges of powder.

13. If the ſame piece of cannon be ſucceſſively fired at an invariable elevation, but with various charges of powder, the greateſt charge being the whole weight of the bullet in powder, and the leaſt not leſs than the fifth part of that weight; then if the elevation be not leſs than eight or ten degrees, it will be found, that ſome of the ranges with the leaſt charge will exceed ſome of thoſe with the greateſt.

14 If two pieces of cannon of the ſame bore, but of different lengths, are ſucceſſively fired at the ſame elevation with the ſame charge of powder; then it will frequently happen that ſome of the ranges with the ſhorter piece will exceed ſome of thoſe with the longer.

15. In diſtant cannonadings, the advantages ariſing from long pieces and large charges of powder are but of little moment.

16. In firing againſt troops with grape-ſhot, it will be found, that charges of powder much leſs than thoſe generally uſed are the moſt advantageous.

17. The principal operations in which large charges of powder appear to be more efficacious than ſmall ones, are the ruining of parapets, the diſmounting of batteries covered by ſtout merlons, or battering in breach; for, in all caſes, if the object be but little removed from the piece, every increaſe of velocity will increaſe the penetration of the bullet.

18. Whatever operations are to be performed by artillery, the leaſt charges of powder with which they can be effected are always to be preferred.

19. Hence, then, the proper charge of any piece of artillery is not that allotment of powder which will communicate the greateſt velocity to the bullet (as moſt practitioners formerly maintained); nor is it to be determined by an invariable proportion of its weight to the weight of the ball: but, on the contrary, it is ſuch a quantity of powder as will produce the leaſt velocity for the purpoſe in hand; and, inſtead of bearing always a fixed ratio to the weight of the ball, it muſt be different according to the different buſineſs which is to be performed.

20. No field-piece ought at any time to be loaded with more than $\frac{1}{6}$, or at the utmoſt $\frac{1}{5}$, of the weight of its bullet in powder; nor ſhould the charge of any battering piece exceed $\frac{1}{3}$, of the weight of its bullet.

21. Although precepts very different from thoſe we have here given have been often advanced by artilleriſts, and have been ſaid to be derived from experience; yet is that pretended experience altogether fallacious: ſince from our doctrine of reſiſtance eſtabliſhed above, it follows, that every ſpeculation on the ſubject of artillery, which is only founded on the experimental ranges of bullets diſcharged with conſiderable velocities, is liable to great uncertainty.

56
Deſcription and uſe of rifled barrels.

The greateſt irregularities in the motion of the bullets are as we have ſeen, owing to the whirling motion on their axis, acquired by the friction againſt the ſides of the piece. The beſt method hitherto known of preventing theſe is by the uſe of pieces with *rifled barrels*. Theſe pieces have the inſides of their cylinders cut with a number of ſpiral channels; ſo that it is in reality a female ſcrew, varying from the common ſcrews only in this, that its threads, or rifles are leſs deflected, and approach more to a right line; it being uſual for the threads with which the rifled barrel is indented, to take little more than one turn in its whole length. The numbers of theſe threads are different in each barrel, according to the ſize of the piece and the fancy of the workman; and in like manner the depth to which they are cut is not regulated by any invariable rule.

The uſual method of charging theſe pieces is this: When the proper quantity of powder is put down; a leaden bullet is taken, a ſmall matter larger than the bore of the piece was before the rifles were cut: and this bullet being laid on the mouth of the piece, and conſequently too large to go down of itſelf, it is forced by a ſtrong rammer impelled by a mallet, and by repeated blows is driven home to the powder; and the ſoftneſs of the lead giving way to the violence with which the bullet is impelled, that zone of the bullet which is contiguous to the piece varies its arcular form, and takes the ſhape of the inſide of the barrel; ſo that it becomes part of a male ſcrew exactly anſwering to the indents of the rifle.

In ſome parts of Germany and Switzerland, however, an improvement is added to this practice; eſpecially in the larger pieces which are uſed for ſhooting at great diſtances. This is done by cutting a piece of very thin leather, or of thin fuſtian, in a circular ſhape, ſomewhat larger than the bore of the barrel. This circle being greaſed on one ſide, is laid upon the muzzle with its greaſy ſide downwards; and the bullet being then placed upon it, is forced down the barrel with it: by which means the leather or fuſtian incloſes the lower half of the bullet, and by its interpoſition between the bullet and the rifles, prevents the lead from being cut by them. But it muſt be remembered, that in the barrels where this is practiſed, the rifles are generally ſhallow, and the bullet ought not to be too large.—But as both theſe methods of charging at the mouth take up a good deal of time; the rifled barrels which have been made in Britain, are contrived to be charged at the breech, where the piece is for this purpoſe made larger than in any other part. The powder and bullet are put in through the ſide of the barrel by an opening, which, when the piece is loaded, is then filled up with a ſcrew. By this means, when the piece is fired, the bullet is forced through the rifles, and acquires the ſpiral motion already deſcribed: and perhaps ſomewhat of this kind, ſays Mr Robins, though not in the manner now practiſed, would be of all others the moſt perfect method for the conſtruction of theſe kinds of barrels.

From the whirling motion communicated by the rifles, it happens, that when the piece is fired, that indented zone of the bullet follows the ſweep of the rifles: and thereby, beſides its progreſſive motion, acquires a circular motion round the axis of the piece; which circular motion will be continued to the bullet after its ſeparation from the piece; and thus a bullet diſcharged from a rifled barrel is conſtantly made to whirl round an axis which is coincident with the line of its flight. By this whirling on its axis, the aberration of the bullet which proves ſo prejudicial to all operations on gunnery, is almoſt totally prevented. The reaſon of this may be eaſily underſtood from conſidering the ſlow motion of an arrow through the air. For example, if a bent arrow, with its wings not placed in ſome degree in a ſpiral poſition, ſo as to make it revolve round its axis as it flies through the air, were ſhot at a mark with a true direction, it would conſtantly deviate from it, in conſequence of being preſſed to one ſide by the convex part oppoſing the air obliquely. Let us now ſuppoſe this deflection in a flight of 100 yards to be equal to 10 yards. Now, if the ſame bent arrow were made to revolve round its axis once every two yards of its flight, its greateſt deviation would take place when it had proceeded only one yard, or made half a revolution; ſince at the end of the next half revolution it would again return to the ſame direction it had at firſt; the convex ſide of the arrow having been once in oppoſite poſitions. In this manner it would proceed during the whole courſe of its flight, conſtantly returning to the true path at the end of every two yards; and when it reached the mark, the greateſt deflection to either ſide that could happen would be equal to what it makes in proceeding one yard, equal to $\frac{1}{100}$th part of the former, or 3.6 inches, a very ſmall deflection when compared with the former one. In the ſame manner, a cannon-ball which turns not round its axis, deviates greatly from the true path, on account of the inequalities on its ſurface; which, although ſmall, cauſe great deviations by reaſon of the reſiſtance of the air, at the ſame time that the ball acquires a motion round its axis in ſome uncertain direction occaſioned by the friction againſt its ſides. But by the motion acquired from the rifles, the error is perpetually corrected in the manner juſt now deſcribed; and accordingly ſuch pieces are much more to be depended on, and will do execution at a much greater diſtance, than the other.

The reaſons commonly alledged for the ſuperiority of rifle barrels over common ones, are, either that the inflammation of the powder is greater, by the reſiſtance which the bullet makes by being thus forced into the barrel, and that hereby it receives a much greater impulſe; or that the bullet by the compounding of its circular and revolving motions, did as it were bore the air, and thereby flew to a much greater diſtance than it would otherwiſe have done; or that by the ſame boring motion it made its way through all ſolid ſubſtances, and penetrated into them much deeper than when fired in the common manner. But Mr Robins hath proved theſe reaſons to be altogether erroneous, by a great number of experiments made with rifle-barrelled pieces. "In theſe experiments," ſays he, "I have found that the velocity of the bullet fired from a rifled barrel was uſually leſs than that of the bullet fired from a common piece with the ſame proportion of powder. Indeed it is but reaſonable to expect that this ſhould be the caſe; for if the rifles are very deep, and the bullet is large enough to fill them up, the friction bears a very conſiderable proportion to the effort of the powder. And that in this caſe the friction is of conſequence enough to have its effects obſerved, I have diſcovered by the continued uſe of the ſame barrel. For the metal of the barrel being ſoft, and wearing away apace, its bore by half a year's uſe was conſiderably enlarged, and conſequently the depth of its rifles diminiſhed; and then I found that the ſame quantity of powder would give to the bullet a velocity near a tenth part greater than what it had done at firſt. And as the velocity of the bullet is not increaſed by the uſe of rifled barrels, ſo neither is the diſtance to which it flies, nor the depth of its penetration into ſolid ſubſtances. Indeed theſe two laſt ſuppoſitions ſeem at the firſt ſight too chimerical to deſerve a formal confutation. But I cannot help obſerving, that thoſe who have been habituated to the uſe of rifled pieces are very excuſable in giving way to theſe prepoſſeſſions. For they conſtantly found, that with them they could fire at a mark with tolerable ſucceſs, though it were placed at three or four times the diſtance to which the ordinary pieces were ſuppoſed to reach. And therefore, as they were ignorant of the true cauſe of this variety, and did not know that it aroſe only from preventing the deflection of the ball; it was not unnatural for them to imagine that the ſuperiority of effect in the rifled piece was owing either to a more violent impulſe at firſt, or to a more eaſy paſſage through the air.

“In order to confirm the foregoing theory of rifle-barrelled pieces, I made ſome experiments by which it might be ſeen whether one ſide of the ball diſcharged from them uniformly keeps foremoſt during the whole courſe. To examine this particular, I took a rifled barrel carrying a bullet of ſix to the pound; but inſtead of its leaden bullet uſed a wooden one of the ſame ſize, made of a ſoft ſpringy wood, which bent itſelf eaſily into the rifles without breaking. And firing the piece thus loaded againſt a wall at ſuch a diſtance as the bullet might not be ſhivered by the blow, I always found, that the ſame ſurface which lay foremoſt in the piece continued foremoſt without any ſenſible deflection during the time of its flight. And this was eaſily to be obſerved, by examining the bullet; as both the marks of the rifles, and the part that impinged on the wall, were ſufficiently apparent. Now, as theſe wooden bullets were but the 16th part of the weight of the leaden ones; I conclude, that if there had been any unequal reſiſtance or deflective power, its effects muſt have been extremely ſenſible upon this light body, and conſequently in ſome of the trials I made the ſurface which came foremoſt from the piece muſt have been turned round in another ſituation.

“But again, I took the ſame piece, and loading it now with a leaden ball, I ſet it nearly upright, ſloping it only three or four degrees from the perpendicular in the direction of the wind; and firing it in this ſituation, the bullet generally continued about half a minute in the air, it riſing by computation to near three quarters of a mile perpendicular height. In theſe trials I found that the bullet commonly came to the ground to the leeward of the piece, and at ſuch a diſtance from it, as nearly correſponded to the angle of its inclination, and to the effort of the wind; it uſually falling not nearer to the piece than 100, nor farther from it than 150, yards. And this is a ſtrong confirmation of the almoſt ſteady flight of this bullet for about a mile and a half: for were the ſame trial made with a common piece, I doubt not but the deviation would often amount to half a mile, or perhaps conſiderably more; though this experiment would be a very difficult one to examine, on account of the little chance there would be of diſcovering where the ball fell.

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Balls from rifled pieces will at length deviate from their true courſe.

“It muſt be obſerved, however, that though the bullet impelled from a rifle-barrelled piece keeps for a time to its regular track with ſufficient nicety; yet if its flights be ſo far extended that the track becomes conſiderably incurvated, it will then undergo conſiderable deflections. This, according to my experiments, ariſes from the angle at laſt made by the axis on which the bullet turns, and the direction in which it flies: for that axis continuing nearly parallel to itſelf, it muſt neceſſarily diverge from the line of the flight of the bullet, when that line is bent from its original direction; and when it once happens that the bullet whirls on an axis which no longer coincides with the line of its flight, then the unequal reſiſtance formerly deſcribed will take place, and the deflecting power hence ariſing will perpetually increaſe as the track of the bullet, by having its range extended, becomes more and more incurvated.—This matter I have experienced in a ſmall rifle-barrelled piece, carrying a leaden ball of near an ounce weight. For this piece, charged with one drachm of powder, ranged about 550 yards at an angle of 12 degrees with ſufficient regularity; but being afterwards elevated to an angle of 24 degrees, it then ranged very irregularly, generally deviating from the line of its direction to the left, and in one caſe not leſs than 100 yards. This apparently aroſe from the cauſe abovementioned, as was confirmed from the conſtant deviation of the bullet to the left; for by conſidering how the revolving motion was continued with the progreſſive one, it appeared that a deviation that way was to be expected.

“The beſt remedy I can think of for this defect is the making uſe of bullets of an egg-like form inſtead of ſpherical ones. For if ſuch a bullet hath its ſhorter axis made to fit the piece, and it be placed in the barrel with its ſmaller end downwards, then it will acquire by the rifles a rotation round its larger axis; and its centre of gravity lying nearer to its fore than its hinder part, its longer axis will be conſtantly forced by the reſiſtance of the air into the line of its flight; as we ſee, that by the ſame means arrows conſtantly lie in the line of their direction, however that line be incurvated.

“But, beſides this, there is another circumſtance in the uſe of theſe pieces, which renders the flight of their bullets uncertain when fired at a conſiderable elevation. For I find by my experiments, that the velocity of a bullet fired with the ſame quantity of powder from a rifled barrel, varies much more from itſelf in different trials than when fired from a common piece.—This, as I conceive, is owing to the great quantity of friction, and the impoſſibility of rendering it equal in each experiment. Indeed, if the rifles are not deeply cut, and if the bullet is nicely fitted to the piece, ſo as not to require a great force to drive it down, and if leather or fuſtian well greaſed is made uſe of between the bullet and barrel, perhaps, by a careful attention to all theſe particulars, great part of the inequality in the velocity of the bullet may be prevented, and the difficulty in queſtion be in ſome meaſure obviated: but, till, this be done, it cannot be doubted, that the range of the ſame piece, at an elevation, will vary conſiderably in every trial; although the charge be each time the ſame. And this I have myſelf experienced, in a number of diverſified trials, with a rifle-barrelled piece loaded at the breech in the Engliſh manner. For here the rifles being indented very deep, and the bullet ſo large as to fill them up completely, I found, that though it flew with ſufficient exactneſs to the diſtance of 400 or 500 yards; yet when it was raiſed to an angle of about 12 degrees (at which angle, being fired with one-fifth of its weight in powder, its medium range is nearly 1000 yards); in this caſe, I ſay, I found that its range was variable although the greateſt care was taken to prevent any inequalities in the quantity of powder, or in the manner of charging. And as, in this caſe, the angle was too ſmall for the firſt mentioned irregularity to produce the obſerved effects; they can only be imputed to the different velocities which the bullet each time received by the unequal action of the friction."

Thus we ſee, that it is in a manner impoſſible entirely to correct the aberrations ariſing from the reſiſtance of the atmoſphere; as even the rifle-barrelled pieces cannot be depended upon for more than one-half of their actual range at any conſiderable elevation. It becomes therefore a problem very difficult of ſolution to know, even within a very conſiderable diſtance, how far a piece will carry its ball with any probability of hitting its mark, or doing any execution. The beſt rules hitherto laid down on this ſubject are thoſe of Mr Robins. The foundation of all his calculations is the velocity with which the bullet flies off from the mouth of the piece. Mr Robins himſelf had not opportunities of making many experiments on the velocities of cannon-balls, and the calculations from ſmaller ones cannot always be depended upon. In the 68th volume of the Phil. Tranſ. Mr Hutton hath recited a number of experiments made on cannon carrying balls from one to three pounds weight. His machine for diſcovering the velocities of theſe balls was the ſame with that of Mr Robins, only of a larger ſize. His charges of powder were two, four, and eight ounces; and the reſults of 15 experiments which ſeem to have been the moſt accurate, are as follow.

38
Mr Hutton's experiments on the velocity of cannon balls.

	Velocity with two ounces.	Velocity with four ounces.	Velocity with eight ounces.
	702 foot in 1″	1068 feet in 1″	1419 feet in 1″
	682	1020	1352
	695	948	1443
	703	973	1360
	725	957	1412
	5)3507	5)4966	5)6986
Mean velo.	701	993	1397

In another courſe, the mean velocities, with the ſame charges of powder, were 613, 873, 1162. "The mean velocities of the balls in the firſt courſe of experiments (ſays Mr Hutton) with two, four, and eight ounces of powder, are as the numbers 1, 1.414, and 1.993; but the ſubduplicate ratio of the weights (two, four, and eight) give the numbers 1, 1.414, and 1, to which the others are ſufficiently near. It is obvious, however, that the greateſt difference lies in the laſt number, which anſwers to the greateſt velocity. It will ſtill be a little more in defect if we make allowance for the weights of the balls; for the mean weights of the balls with the two and four ounces in $18\frac{3}{4}$ ounces, but of the eight ounces it is $18\frac{3}{5}$: diminiſhing therefore the number 1.993 in the reciprocal ſubduplicate ratio of $18\frac{3}{5}$ to $18\frac{3}{4}$, it becomes 1.985, which falls ſhort of the number 2 by .015, or the 133d part of itſelf. A ſimilar defect was obſerved in the other courſe of experiments; and both are owing to three evident cauſes, *viz.* 1. The leſs length of cylinder through which the ball was impelled; for with the eight-ounce charge it lay three or four inches nearer to the muzzle of the piece than with the others. 2. The greater quantity of elaſtic fluid which eſcaped in this caſe than in the others by the windage. This happens from its moving with a greater velocity; in conſequence of which, a greater quantity eſcapes by the vent and windage than in ſmaller velocities. 3. The greater quantity of powder blown out unfired in this caſe than in that of the leſſer velocities; for the ball which was impelled with the greater velocity, would be ſooner out of the piece than the others, and the more ſo as it had a leſs length of the bore to move through; and if powder fire in time, which cannot be denied, though indeed that time is manifeſtly very ſhort, a great quantity of it muſt remain unfired when the ball with the greater velocity iſſues from the piece, than when that which has the leſs velocity goes out, and ſtill the more ſo as the bulk of powder which was at firſt to be inflamed in the one caſe ſo much exceeded that in the others.

"Let us now compare the correſponding velocities in both caſes. In the one they are 701, 993, 1397; in the other, 613, 873, 1162. Now the ratio of the firſt two numbers, or the velocities with two ounces of powder, is that of 1 to 1.1436, the ratio of the next two is that of 1 to 1.1375, and the ratio of the laſt is that of 1 to 1.2022. But the mean weight of the ſhot for two and four ounces of powder, was $28\frac{1}{3}$ ounces in the firſt courſe and $18\frac{3}{4}$ in this; and for eight ounces of powder, it was $28\frac{2}{3}$ in the firſt and $18\frac{3}{5}$ in this. Taking therefore the reciprocal ſubduplicate ratios of theſe weights of ſhot, we obtain the ratio of 1 to 1.224 for that of the balls which were fired with two ounces and four ounces of powder, and the ratio of 1 to 1.241 for the balls which were fired with eight ounces. But the real ratios above found are not greatly different from theſe: and the variation of the actual velocities from this law of the weights of ſhot, inclines the ſame way in both courſes of experiments. We may now collect into one view the principal inferences that have reſulted from theſe experiments.

1. "It is evident from them, that powder fires almoſt inſtantaneouſly.

2. "The velocities communicated to balls or ſhot of the ſame weight with different quantities of powder, are nearly in the ſubduplicate ratio of theſe quantities; a very ſmall variation in defect taking place when the quantities of powder become great.

3. "When ſhot of different weights are fired with the ſame quantity of powder, the velocities communicated to them are nearly in the reciprocal ſubduplicate ratio of their weights.

4. "Shot which are of different weights, and impelled by different quantities of powder, acquire velocities which are directly as the ſquare roots of the quantities of powder, and inverſely as the ſquare roots of the weights of the ſhot nearly."

39
Mr Robin's method of finding the ranges of bullets.

The velocities of the bullets being thus found as nearly as poſſible, the ranges may be found by the following rules laid down by Mr Robins.

1. "Till the velocity of the projectile ſurpaſſes that of 1100 feet in a ſecond, the reſiſtance may be reckoned to be in the duplicate proportion of the velocity, and its mean quantity may be reckoned about half an ounce avoirdupoiſe on a 12-pound ſhot, moving with a velocity of about 25 or 26 feet in a ſecond.

2. "If the velocity be greater than that of 1100 or 1200 feet in a ſecond, then the abſolute quantity of the reſiſtance in theſe greater velocities will be near three times as great as it ſhould be by a compariſon

with the ſmaller velocities.—Hence then it appears, that if a projectile begins to move with a velocity leſs than that of 1100 feet in 1″, its whole motion may be ſuppoſed to be conſidered on the hypotheſis of a reſiſtance in the duplicate ratio of the velocity. And if it begins to move with a velocity greater than this laſt mentioned, yet if the firſt part of its motion, till its velocity be reduced to near 1100 feet in 1″, be conſidered ſeparately from the remaining part in which the velocity is leſs than 1100 feet in 1″; it is evident, that both parts may be truly aſſigned on the ſame hypotheſis; only the abſolute quantity of the reſiſtance is three times greater in the firſt part than in the laſt. Wherefore, if the motion of a projectile on the hypotheſis of a reſiſtance in the duplicate ratio of the velocity be truly and generally aſſigned, the actual motions of reſiſted bodies may be thereby determined, notwithſtanding the increaſed reſiſtances in the great velocities. And, to avoid the diviſion of the motion into two, I ſhall ſhow how to compute the whole at one operation with little more trouble than if no ſuch increaſed reſiſtance took place.

" To avoid frequent circumlocutions, the diſtance to which any projectile would range in a vacuum on the horizontal plane at 45° of elevation, I ſhall call the potential random of that projectile; the diſtance to which the projectile would range *in vacuo* on the horizontal plane at any angle different from 45°, I ſhall call the potential range of the projectile at that angle; and the diſtance to which a projectile really ranges, I ſhall call its actual range.

" If the velocity with which a projectile begins to move is known, its potential random and its potential range at any given angle are eaſily determined from the common theory of projectiles*; or more generally, if either its original velocity, its potential random, or its potential range, at a given angle, are known, the other two are eaſily found out.

" To facilitate the computation of reſiſted bodies, it is neceſſary, in the conſideration of each reſiſted body, to aſſign a certain quantity, which I ſhall denominate F, adapted to the reſiſtance of that particular projectile. To find this quantity F to any projectile given, we may proceed thus: Firſt find, from the principles already delivered, with what velocity the projectile muſt move, ſo that its reſiſtance may be equal to its gravity. Then the height from whence a body muſt deſcend in a vacuum to acquire this velocity is the magnitude of F ſought. But the conciſeſt way of finding this quantity F to any ſhell or bullet is this: If it be of ſolid iron, multiply its diameter meaſured in inches by 300, the product will be the magnitude of F expreſſed in yards. If, inſtead of a ſolid iron-bullet, it is a ſhell or a bullet of ſome other ſubſtance; then, as the ſpecific gravity of iron is to the ſpecific gravity of the ſhell or bullet given, ſo is the F correſponding to an iron-bullet of the ſame diameter to the proper F for the ſhell or bullet given. The quantity F being thus aſſigned, the neceſſary computations of theſe reſiſted motions may be diſpatched by the three following propoſitions, always remembering that theſe propoſitions proceed on the hypotheſis of the reſiſtance being in the duplicate proportion of the velocity of the reſiſted body. How to apply this principle, when the velocity is ſo great as to have its reſiſtance augmented beyond this rate, ſhall he ſhown in the corollary to be annexed to the firſt propoſition.

Actual ranges expreſſed in F	Correſponding potetinal ranges expreſſed in F.	Actual ranges expreſſed in F	Correſponding potential ranges expreſſed in F.	Actual ranges expreſſed in F	Correſponding potentia ranges expreſſed in F.
0.01	0.0100	1.5	2.6422	3.25	13.2556
0.02	0.0201	1.55	2.7890	3.3	13.8258
0.04	0.0405	1.6	2.9413	3.35	14.4195
0.06	0.0612	1.65	3.0994	3.4	15.0377
0.08	0.0822	1.7	3.2635	3.45	15.6814
0.1	0.1034	1.75	3.4338	3.5	16.3517
0.12	0.1249	1.8	3.6107	3.55	17.0497
0.14	0.1468	1.85	3.7944	3.6	17.7768
0.15	0.1578	1.9	3.9851	3.65	18.5341
0.2	0.2140	1.95	4.1833	3.7	19.3220
0.25	0.2722	2.	4.3890	3.75	20.1446
0.3	0.3324	2.05	4.6028	3.8	21.0006
0.35	0.3947	2.1	4.8249	3.85	21.8925
0.4	0.4591	2.15	5.0557	3.9	22.8218
0.45	0.5258	2.2	5.2955	3.95	23.7901
0.5	0.5949	2.25	5.5446	4.0	24.7991
0.55	0.6664	2.3	5.8036	4.05	25.8506
0.6	0.7404	2.35	6.0728	4.1	26.9465
0.65	0.8170	2.4	6.3526	4.15	28.0887
0.7	0.8964	2.45	6.6435	4.2	29.2792
0.75	0.9787	2.5	6.9460	4.25	30.5202
0.8	1.0638	2.55	7.2605	4.3	31.8138
0.85	1.1521	2.6	7.5875	4.35	33.1625
0.9	1.2436	2.65	7.9276	4.4	34.5686
0.95	1.3383	2.7	8.2813	4.45	36.0346
1.0	1.4366	2.75	8.6492	4.5	37.5632
1.05	1.5384	2.8	9.0319	4.55	39.1571
1.1	1.6439	2.85	9.4300	4.6	40.8193
1.15	1.7534	2.9	9.8442	4.65	42.4527
1.2	1.8669	2.95	10.2752	4.7	44.3605
1.25	1.5845	3.0	10.7237	4.75	46.2460
1.3	2.1066	3.05	11.1904	4.8	48.2127
1.35	2.2332	3.1	11.6761	4.85	50.2641
1.4	2.3646	3.15	12.1816	4.9	52.4040
1.45	2.5008	3.2	12.7078	4.95	54.6363
				5.0	56.9653

" PROP. I. Given the actual range of a given ſhell or bullet at any ſmall angle not exceeding 8° or 10°, to determine its potential range, and conſequently its potential random and original velocity.

" Sol. Let the actual range given be divided by F correſponding to the given projectile, and find the quote in the firſt column of the preceding table; then the correſponding number in the ſecond column multiplied into F will be the potential range ſought: and thence by the methods already explained, the potential random and the original velocity of the projectile is given.

Exam. An 18 pounder, the diameter of whoſe ſhot is about 5 inches, when loaded with 2 lb. of powder, ranged at an elevation 3° 30′ to the diſtance of 975 yards.

" The F correſponding to this bullet is 1500 yards, and the quote of the actual range by this number is 65; correſponding to which, in the ſecond column, is .817; whence 817 F, or 1225 yards, is the potential range ſought; and this, augmented in the ratio of the ſine of twice the angle of elevation to the radius, gives

* See *Projectile*.

gives 10050 yards for the potential random; whence it will be found, that the velocity of the projectile was that of 984 feet in a ſecond.

“ Cor. 1ſt. If the converſe of this propoſition be deſired; that is, if the potential range in a ſmall angle be given, and thence the actual range be ſought; this may be ſolved with the ſame facility by the ſame table: for if the given potential range be divided by its correſpondent F, then oppoſite to the quote ſought in the ſecond column, there will be found in the firſt column a number which multiplied into F will give the actual range required. And from hence it follows, that if the actual range be given at one angle, it may be found at every other angle not exceeding 8° or 10°.

“ Cor. 2d. If the actual range at a given ſmall angle be given, and another actual range be given, to which the angle is ſought; this will be determined by finding the potential range correſponding to the two given actual ranges; then the angle correſponding to one of theſe potential ranges being known, the angle correſponding to the other will be found by the common theory of projectiles.

“ Cor. 3d. If the potential random deduced from the actual range by this propoſition exceeds 13000 yards; then the original velocity of the projectile was ſo great as to be affected by the treble reſiſtance deſcribed above; and conſequently the real potential random will be greater than what is here determined. However, in this caſe, the true potential random may be thus nearly aſſigned. Take a 4th continued proportional to 13000 yards, and the potential random found by this propoſition, and the 4th proportional thus found may be aſſumed for the true potential random ſought. In like manner, when the true potential random is given greater than 13000 yards, we muſt take two mean proportionals between 13000 and this random*; and the firſt of theſe mean proportionals muſt be aſſumed inſtead of the random given, in every operation deſcribed in theſe propoſitions and their corollaries. And this method will nearly allow for the increaſed reſiſtance in large velocities, the difference only amounting to a few minutes in the angle of direction of the projected body, which provided that angle exceeds two or three degrees is uſually ſcarce worth attending to.

“ Of this proceſs take the following example.

“ A 24 pounder fired with 12 pounds of powder, when elevated at 7° 15′, ranged about 2500 yards. Here the F being near 1700 yards, the quote to be ſought in the firſt column is 147, to which the number correſponding in the ſecond column is 2.556; whence the potential range is near 4350 yards, and the potential random thence reſulting 17400. But this being more than 13000, we muſt, to get the true potential random, take a 4th continued proportional to 13000 and 17400; and this 4th proportional, which is about 31000 yards, is to be eſteemed the true potential random ſought; whence the velocity is nearly that of 1730 feet in a ſecond.

“ Scholium. This propoſition is confined to ſmall angles, not exceeding 8° or 10°. In all poſſible caſes of practice, this approximation, thus limited, will not differ from the moſt rigorous ſolution by ſo much as what will often intervene from the variation of the denſity of the atmoſphere in a few hours time; ſo that the errors of the approximation are much ſhort of other inevitable errors, which ariſe from the nature of this ſubject.

“ Prop. II. Given the actual range of a given ſhell or bullet, at any angle not exceeding 45°, to determine its potential range at the ſame angle; and thence its potential random and original velocity.

“ Sol. Diminiſh the F correſponding to the ſhell or bullet given in the proportion of the radius to the coſine of ¾ of the angle of elevation. Then, by means of the preceding table, operate with this reduced F in the ſame manner as is preſcribed in the ſolution of the laſt propoſition, and the reſult will be the potential range ſought; whence the potential random, and the original velocity, are eaſily determined.

“ Exam. A mortar for ſea-ſervice, charged with 30lb. of powder, has ſometimes thrown its ſhell, of 12¾ inches diameter, and of 231 lb. weight, to the diſtance of 2 miles, or 5450 yards. This at an elevation of 45°.

“ The F to this ſhell, if it were ſolid, is 3825 yards; but as the ſhell is only ⅘ of a ſolid globe, the true F is no more than 3060 yards. This, diminiſhed in the ratio of the radius to the co-ſine of ¾ of the angle of elevation, becomes 2544. The quote of the potential range by this diminiſhed F is 1,384; which ſought in the firſt column of the preceding table gives 2.280 for the correſponding number in the ſecond column; and this multiplied into the reduced F, produces 5800 yards for the potential range ſought, which, as the angle of elevation was 45°, is alſo the potential random: and hence the original velocity of this ſhell appears to be that of about 748 feet in a ſecond.

“ Cor. The converſe of this propoſition, that is, the determination of the actual range from the potential range given, is eaſily deduced from hence by means of the quote of the potential range divided by the reduced F; for this quote ſearched out in the ſecond column will give a correſponding number in the firſt column, which multiplied into the reduced F, will be the actual range ſought.

“ Alſo, if the potential random of a projectile be given, or its actual range at a given angle of elevation; its actual range at any other angle of elevation, not greater than 45°, may hence be known. For the potential random will aſſign the potential range at any given angle; and thence, by the method of this corollary, the actual range may be found.

“ Exam. A fit muſquet-bullet fired from a piece of the ſtandard dimenſions, with ⅔ of its weight in good powder, acquires a velocity of near 900 feet in a ſecond; that is, it has a potential random of near 8400 yards. If now the actual range of this bullet at 15° was ſought, we muſt proceed thus:

“ From the given potential random it follows, that the potential range at 15° is 4200 yards; the diameter of the bullet is ¾ of an inch; and thence, as it is of lead, its proper F is 337.5 yards, which, reduced in the ratio of the radius to the coſine of ¾ of 15°, becomes 331 yards. The quote of 4200 by this number is 12.7 nearly; which, being ſought in the ſecond column, gives 3.2 nearly for the correſponding number in the firſt colume; and this multiplied into 331 yards (the reduced F) makes 1059 yards for the actual range ſought.

“ Exam. II. The ſame bullet, fired with its whole weight in powder, acquires a velocity of about 2100 feet in a ſecond, to which there correſponds a potential random of about 45700 yards. But this number greatly exceeding 13000 yards, it muſt be reduced by the method deſcribed in the third corollary of the firſt propoſition, when it becomes 19700 yards. If now the actual range of this bullet at 15° was required, we ſhall from hence find, that the potential range at 15° is 9850 yards, which divided by the reduced F of the laſt example, gives for a quote 2975: and thence following the ſteps preſcribed above, the actual range of this bullet comes out 1396 yards, exceeding the former range by no more than 337 yards; whereas the difference between the two potential ranges is above ten miles. Of ſuch prodigious efficacy is the reſiſtance of the air, which hath been hitherto treated as too inſignificant a power to be attended to in laying down the theory of projectiles!

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* The operations directed in this corollary are beſt performed by the table of logarithms.

"SCHOL. I muſt here obſerve, that as the denſity of the atmoſphere perpetually varies, increaſing and diminiſhing often by $\frac{1}{30}$ part, and ſometimes more, in a few hours; for that reaſon I have not been over rigorous in forming theſe rules, but have conſidered them as ſufficiently exact when the errors of the approximation do not exceed the inequalities which would take place by a change of $\frac{1}{30}$ part in the denſity of the atmoſphere. With this reſtriction, the rules of this propoſition may be ſafely applied in all poſſible caſes of practice. That is to ſay, they will exhibit the true motions of all kinds of ſhells and cannon-ſhot, as far as 45° of elevation, and of all muſket bullets fired with their largeſt cuſtomary charges, if not elevated more than 30°. Indeed, if experiments are made with extraordinary quantities of powder, producing potential randoms greatly ſurpaſſing the uſual rate; then in large angles ſome farther modifications may be neceſſary. And though, as theſe caſes are beyond the limits of all practice, it may be thought unneceſſary to conſider them; yet to enable thoſe who are ſo diſpoſed to examine theſe uncommon caſes, I ſhall here inſert a propoſition, which will determine the actual motion of a projectile at 45°, how enormous ſoever its original velocity may be. But as this propoſition, will rather relate to ſpeculative than practical caſes, inſtead of ſuppoſing the actual range known, thence to aſſign the potential random, I ſhall now ſuppoſe the potential random given, and the actual range to be thence inveſtigated.

"PROP. III. Given the potential random of a given ſhell or bullet, to determine its actual range at 45°.

SOL. Divide the given potential random by the F correſpending to the ſhell or bullet given, and call the quotient q, and let l be the difference between the tabular logarithms of 25 and of q, the logarithm of 10 being ſuppoſed unity; then the actual range ſought is $3.4F \mp 2lF - \frac{ll}{10}F$, where the double ſine of 2lF is to be thus underſtood; that if q be leſs than 25, it muſt be — 2lF: if it be greater, then it muſt be + 2lF. In this ſolution, q may be any number not leſs than 3, nor more than 2500.

"COR. Computing in the manner here laid down, we ſhall find the relation between the potential randoms, and the actual range at 45°, within the limits of this propoſition, to be expreſſed in the folllowing table.

Potential Random.	Actual Range at 45°.
3 F	1,5 F
6 F	2,1 F
10 F	2,6 F
20 F	3,2 F
30 F	3,6 F
40 F	3,8 F
50 F	4,0 F
100 F	4,6 F
200 F	5,1 F
500 F	5,8 F
1000 F	6,4 F
2500 F	7,0 F

Whence it appears that, when the potential random is increaſed from 3F to 2500F, the actual range is only increaſed from 1½ F to 7 F; ſo that an increaſe of 2497F in the potential random produces no greater an increaſe in the actual range than 5½F, which is not its $\frac{1}{400}$ part; and this will again be greatly diminiſhed on account of the increaſed reſiſtance, which takes place in great velocities. So extraordinary are the effects of this reſiſtance; which we have been hitherto taught to regard as inconſiderable.

"That the juſtneſs of the approximations laid down in the 2d and 3d propoſitions may be eaſier examined; I ſhall conclude theſe computations by inſerting a table of the actual ranges at 45° of a projectile, which is reſiſted in the duplicate proportion of its velocity. This table is computed by methods different from thoſe hitherto deſcribed, and is ſufficiently exact to ſerve as a ſtandard with which the reſult of our other rules may be compared. And ſince whatever errors occur in the application of the preceding propoſitions, they will be moſt ſenſible at 45° of elevation, it follows, that hereby the utmoſt limits of thoſe errors may be aſſigned.

Potential Randoms.	Actual ranges at 45°.
,1 F	,0963 F
,25 F	,2282 F
,5 F	,4203 F
,75 F	,5868 F
1,0 F	,7323 F
1,25 F	,860 F
1,5 F	,978 F
1,75 F	1,083 F
2,0 F	1,179 F
2,5 F	1,349 F
3,0 F	1,495 F
3,5 F	1,624 F
4,0 F	1,738 F
4,5 F	1,840 F
5,0 F	1,930 F
5,5 F	2,015 F
6,0 F	2,097 F
6,5 F	2,169 F
7,0 F	2,237 F
7,5 F	2,300 F
8,0 F	2,359 F
8,5 F	2,414 F
9,0 F	2,467 F
9,5 F	2,511 F
10,0 F	2,564 F
11,0 F	2,651 F

Potential Randoms.	Actual Range at 45°.
13,0 F	2,804 F
15,0 F	2,937 F
20,0 F	3,196 F
25,0 F	3,396 F
30,0 F	3,557 F
40,0 F	3,809 F
50,0 F	3,998 F

40 Of the different parts and proportions of guns.

We have now only to conſider that part of practical gunnery which relates to the proportions of the different parts of cannon, the metal of which they are made, &c.

Formerly the guns were made of a very great length, and were on that account extremely troubleſome and unmanageable. The error here was firſt diſcovered by accident; for ſome cannon, having been caſt by miſtake two feet and an half ſhorter than the common ſtandard, were found to be equally efficacious in ſervice with the common ones, and much more manageable. This ſoon produced very conſiderable alterations in the form of the artillery throughout Europe: but in no country have greater improvements in this reſpect been made than in Britain. For a long time braſs, or rather a kind of bell-metal, was thought preferable to caſt iron for making of cannon. The compoſition of this metal is generally kept a ſecret by each particular founder. The author of the Military Dictionary gives the following proportion as the moſt common, viz. “ To 240 lb. of metal fit for caſtiug they put 68 lb. of copper, 50 lb. of braſs, and 12 lb. of tin. To 4200 lb. of of metal fit for caſting the Germans put $3687\frac{3}{4}\frac{3}{7}$ lb. of copper, $204\frac{1}{4}\frac{2}{7}$ lb. of braſs, and $307\frac{3}{4}\frac{6}{7}$ lb. of tin. Others uſe 100 lb, of copper, 6 lb. of braſs, and 9 lb. of tin; while ſome make uſe of 100 lb. of copper, 10 lb. of braſs, and 15 lb. of tin. This compoſition was both found to be very expenſive, and alſo liable to great inconveniences in the uſing. A few years ago, therefore, a propoſal was made by Mr Muller for uſing iron guns of a lighter conſtruction than the braſs ones, by which he ſuppoſed that a very great ſaving would be made in the expence; and likewiſe that the guns of the new conſtruction would be more manageable, and even efficacious, than the old ones. “ The reduction of the expence (ſays Mr Muller) of the very large artillery neceſſary for ſea and land ſervice, is to be conſidered under two heads; the one, To diminiſh the weight; and the other, Not to uſe any braſs field-artillery, but only iron, to leſſen the great burthen of our ſhips of war, and to carry larger calibers than thoſe of other nations of the ſame rate. If the weights of our guns are diminiſhed, they will require fewer hands to manage them, and of conſequence a ſmaller number will be expoſed to danger at a time: and if we carry larger calibers, our rates will be a match for larger ſhips.

47 Compoſition for braſs guns.

42 Mr Muller's propoſal for reducing the weight of guns.

“ The advantage of uſing iron guns in the field inſtead of braſs, will be that the expences are leſſened in proportion to the coſt of braſs to that of iron, which is as 8 to 1.

“ The only objection againſt iron is, its pretended brittleneſs: but as we abound in iron that is ſtronger and tougher than any braſs, this objection is invalid. This I can aſſert; having ſeen ſome that cannot be broken by any force, and will flatten like hammered iron; if then we uſe ſuch iron, there can be no danger of the guns burſting in the moſt ſevere action.

“ Though braſs guns are not liable to burſt, yet they are ſooner rendered unſerviceable in action than iron. For by the ſoftneſs of the metal, the vent widens ſo ſoon, and they are ſo liable to bend at the muzzle, that it would be dangerous to fire them; as we found by experience at Belleiſle, and where we were obliged to take guns from the ſhips to finiſh the ſiege.

“ Theſe being undeniable facts, no poſſible reaſon can be aſſigned againſt uſing iron guns in both ſea and land ſervice, and thereby leſſen the expences of artillery ſo conſiderably as will appear by the following tables.

Lengths and Weights of Iron Ship-Guns.

OLD PIECES. NEW PIECES

Calib.	Length.		Weight.			Calib.	Length.		Weight.		
	Ft	In.					Ft.	In.			
3	4	6	7	1	7	3	3	6	3	3	0
4	6	0	12	2	13	6	4	4	7	2	0
6	7	0	17	1	14	9	5	0	11	1	0
9	7	0	23	2	2	12	5	6	15	0	0
12	9	0	32	3	3	18	6	4	22	2	0
18	9	0	41	1	8	24	7	0	30	0	0
24	9	0	48	0	0	32	7	6	40	0	0
32	9	6	53	3	23	42	8	4	52	2	0
42	10	0	55	1	12	48	8	6	60	0	0

“ Guns of this conſtruction appear ſufficiently ſtrong from the proof of two three-pounders made for Lord Egmont, and they even may be made lighter and of equal ſervice.

Length and Weight of Battering Pieces.

OLD BRASS. NEW IRON.

Calib.	Length.		Weight.			Calib.	Legnth.		Weight.		
	Ft.	In.					Ft.	In.			
6	8	0	19	1	0	6	6	1	9	1	0
9	9	0	25	0	0	9	7	0	14	0	0
12	9	0	29	0	0	12	7	8	8	0	0
18	9	6	48	0	0	18	9	0	29	1	0
24	9	6	51	0	0	24	9	8	37	3	0
32	10	0	55	2	0	32	9	0	42	0	0

Total 227 Total 151.
Diff. 72.

“ That theſe guns are ſufficiently ſtrong, is evident from the former trial; beſides, there are ſeveral 32 pounders of the ſame dimenſions and weight now exiſting and ſerviceable; thought caſt in king Charles II.'s time.

N. B. Theſe battering pieces may ſerve in garriſons.

"It appears from theſe tables, that no proportion has been obſerved in any guns hitherto made, in reſpect to their length or weight, but merely by gueſs.

Some Examples to ſhow what may be ſaved by this Scheme.

The old Royal George carried 100 braſs guns, which weighed together 218.2 tons: the ton coſts 130 pounds, workmanſhip included.

The expence of theſe guns is then 28366 pounds
A ſet of iron guns of the ſame number and calibers, according to my conſtruction, weighs - 127.8 tons
The ton coſt 16 pounds, and the whole ſet - - - - 2044.8 pounds
The Royal George carries then 90.4 tons more than is neceſſary, and the difference between the expence is - - 26321.2 pounds
That is, 12.5 times more than the new iron ſet coſts: or 12 ſhips of the ſame rate may be fitted out at leſs charge.
A ſet of the Old iron guns for a firſt-rate weighs 204.4 tons
A ſet of the New iron guns for a firſt-rate weighs 127.8 tons
The difference between the weight of the old and new is - 76.6 tons
The difference between the expence is then - - 1225.6 pounds
A ſet of braſs battering pieces weighs 11.36 tons
A ton coſts 130 pounds, and the ſet 1476.8 pounds
A ſet of the new weighs - 7.55 tons
The ton coſts 16 pounds, and the ſet 117.8 pounds
That is, the old ſet coſts 11 times, and 632 over, more than the new ſet; or 11 ſets of the new could be made at leſs expence than one of the old.

"This table ſhows what may be ſaved in the navy; and if we add thoſe on board ſloops, the different garriſons, and the field train, with the great expence of their carriage in the field, it may be found pretty near as much more.

Num of Guns	Weight of Old	Weight of New	Differ.	Num of Ships	Total difference
100	4367 3	2556 0	1811 3	5	9058 0
90	3537 3	2001 0	1536 3	9	13827 3
80	3108 3	1827 0	1287 3	7	9014 1
74	1091 0	1840 2	1250 2	32	40016 0
70	2997 0	1796 2	1200 2	10	12005 0
64	2543 3	1305 0	1258 2	23	28485 2
60	2177 3	1185 0	972 3	30	29782 2
50	1881 1	1035 0	846 1	19	16078 3
44	1365 2	705 0	660 2	8	5284 0
40	1234 2	312 2	922 0	9	8298 0
36	963 3	450 0	513 3	7	3596 1
32	956 2	435 0	521 2	28	14602 0
28	593 2	285 0	308 2	23	7095 1
24	531 3	255 0	276 3	12	3321 0
20	421 2	191 1	230 1	15	3453 2

Difference between the weights - 203918 3 0
Expences of the Braſs guns of two firſt rates 203918 15 0
Expences of the Iron ditto - - 43109 5 0

We get L.257028 0 0

Plate CCXXV. 43 Proportions, &c. of the guns made at Carron.

This and other propoſals for reducing the weight and expence of guns have been greatly attended to of late; and the Carron-company in Scotland have not only greatly improved theſe of the old conſtruction, but a gun of a new conſtruction hath been invented by Mr Charles Gaſcoigne director of that work, which promiſes to be of more effectual ſervice than any hitherto made uſe of.——Fig. 6. repreſents the form and proportion of the guns made at Carron, and which ſerve for thoſe of all ſizes, from ¼ pounders and upwards. The proportions are meaſured by the diameters of the caliber, or bore of the gun, divided into 16 equal parts, as repreſented in the figure. The following are the names of the different parts of a cannon.

AB, the length of the cannon.
AE, the firſt reinforce.
EF, the ſecond reinforce.
FB, the chaſe.
HB, the muzzle.
Ao the caſcabel, or pomiglion.
AC, the breech.
CD, the vent-field.
FI, the chaſe-girdle.
rs, the baſe-ring and ogee.
t, the vent-aſtragal and fillets.
pq, the reinforce-ring and ogee.
vw, the ſecond reinforce ring and ogee.
x, the chaſe-aſtragal and fillets.
z, the muzzle-aſtragal and fillets.
n, the muzzle mouldings.
m, the ſwelling of the muzzle.
A*i*, the breech mouldings.
TT, the trunnions.

The dotted lines along the middle of the piece ſhow the dimenſions of the caliber, and the dotted circle ſhows the ſize of the ball. Fig. 7. ſhows a cohorn made alſo at Carron, and which may be meaſured by the ſame ſcale.

44 Uſe and deſcription of carriages.

As the breech of the cannon receives an equal impulſe with the bullet from the action of the inflamed gunpowder, it thence follows, that at the moment the bullet flies off, the piece itſelf puſhes backward with very great force. This is called the *recoil* of the cannon; and if the piece is not of a very conſiderable weight, it would fly upwards, or to a ſide, with extreme violence. If again it was firmly faſtened down ſo that it could not move in the leaſt, it would be very apt to burſt, on account of the extreme violence with which the powder would then act upon it. For this reaſon it hath been found neceſſary to allow the recoil to take place, and conſequently all large pieces of artillery are mounted upon carriages with wheels, which allow them to recoil freely; and thus they may be fired without any danger. There are ſeveral ſorts of carriages for ordnance, *viz.* baſtard carriages, with low wheels and high wheels; ſea-carriages, made in imitation of thoſe for ſhip-guns; and carriages for field-pieces, of which there are two kinds. The carriages muſt be proportioned to the pieces mounted on them. The ordinary proportion is for the carriage to have once and a half the length of the gun, the wheels to be half the length of the piece in height. Four times the diameter or caliber gives the depth of the planks in the fore end; in the middle 3¼.

45 Deſcription of the carronade.

Fig. 8. ſhows Mr Gaſcoigne's newly-invented or rather improved gun called a *carronade**; and which, in June 1779, was by the king and council inſtituted a ſtandard navy-gun, and 10 of them appointed to be added to each ſhip of war, from a firſt-rate to a ſloop. Of this gun the Carron company have publiſhed the following account.

“The carronade is made ſo ſhort, that it is worked with its carriage in the ſhip's port; the trunnions lying immediately over the ſill of the port: it is correctly bored; and the ſhot being perfectly round, fills the caliber with ſuch exactneſs, that the leaſt poſſible of the impulſe of the powder eſcapes, upon exploſion, between the cylinder and the ſhot; which laſt alſo is thereby more truly directed in its flight. The bottom of the cylinder is a hemiſphere, to which the end of the cartridge is not liable to ſtick, and in which the ſmalleſt charge of powder envelopes the ſhot, exhauſting nearly the whole of its impelling force upon it: the trunnions are placed ſo as to leſſen the recoil, and that the gun cannot reſt againſt the ſides of the carriage, and is balanced with the utmoſt facility. There are views caſt upon the vent and muzzel, to point the gun quickly to an object at 250 and 500 yards diſtance. There is an handle A fixed upon the pommel-end of the gun, by which it is horizontally ranged and pointed; and there is a ring caſt upon the caſcabel, through which the breechin rope is reeved, the only rope uſed about theſe guns.

“The carronade is mounted upon a carriage B, with a perfectly ſmooth bottom of ſtrong plank, without trucks; inſtead of which there is fixed on the bottom of the carriage, perpendicular from the trunnions, a gudgeon C of proper ſtrength, with an iron waſher D and pin E at the lower end thereof. This gudegon is let into a correſponding groove F, cut in a ſecond carriage G, called a *ſlide-carriage*; the waſher ſupported by the pin over-reaching the under-edges of the groove H. This ſlide-carriage is made with a ſmooth upper ſurface, upon which the gun-carriage is moved, and by the gudgeon always kept in its right ſtation to the port; the groove in the ſlide-carriage being of a ſufficient length to allow the gun to recoil and be loaded within board. The ſlide-carriage, the groove included, is equally broad with the fore-part of the gun-carriage, and about four times the length; the fore-part of the ſlide-cariage is fixed by hinge-bolts I, to the quick-work of the ſhip below the port, the end lying over the ſill, cloſe to the outſide plank, and the groove reaching to the fore end; the gudgeon of the gun-carriage, and conſequently the trunnions of the gun, are over the ſill of the port when the gun is run out; and the port is made of ſuch breadth, with its ſides bevelled off within board, that the gun and carriage may range from bow to quarter. The ſlide-carriage is ſupported from the deck at the hinder end, by a wedge K, or ſtep-ſtool; which being altered at pleaſure, and the fore-end turning upon the hinge-bolts, the carriage can be conſtantly kept upon an horizontal plane, for the more eaſy and quick working of the gun when the ſhip lies along.

“The gun and carriages beingin their places, the breechin rope, which muſt be ſtrong and limber, is reeved through the ring on the breech, then led thro' an eye-bolt drove downwards, the eye ſtanding upright upon the upper edge of each cheek of the gun-carriage; from theſe eye-bolts the ends of the breechin rope are ſeized down as uſual to an eye bolt driven into the quick-work on each ſide, in a line with the lower ſurface of the ſlide carriage.

“The gun being mounted and ready for action, is loaded with $\frac{1}{12}$th part of the weight of its ball in ſervice charge of powder put into a wollen cartridge, and the end tied up with worſted yarn, and placed next to the ſhot; and with a ſingle ball, well rammed home upon the powder, without a wadding between them: the gun being then run out in the port, is ranged and elevated with great facility, by means of the handle on the pommel; and, by the views, very quickly pointed.—Upon diſcharge, the gun attempts to kick upwards, which being prevented by the waſher of the gudgeon bearing hard againſt the under part of the ſlide-carriage, the recoil takes place; and the gudgeon ſliding backwards in the groove (the waſher ſtill bearing againſt an iron plate on the under edge of the groove), till the gun is brought up by the breechin rope, as much re-action ſucceeds as ſlackens the rope, ſo that the gun and carriage may be inſtantly turned fore and aft by the handle, and loaded again.

“This gun has many ſingular advantages over the others of light conſtruction.—It is ſo extremely light, that the ſmalleſt ſhips can carry almoſt any weight of ſhot (the 12-pounder weighing under 500 wt. and the other calibers in proportion), and that without being attended with the inconveniences imputed generally to light guns, ſince it cannot injure its carriage, or jump out of its ſtation in the port upon recoil; and it will never heat.

“It can be eaſily managed and worked of all calibers, from the 12 pounders downwards with two hands, and the 18 and 24-pounders with three hands. It may be readily ranged, pointed, and diſcharged, twice in three minutes, which doubles the ſtrength of the ſhip againſt an enemy of equal force. It is wrought upon a horizontal plane to windward or to leeward how much ſoever the ſhip lies along under a preſſure of ſail; and therefore, beſides being hampered with no tackles or other ropes, except the breechin rope, it may be worked with as much eaſe and expedition in chace or in a gale of wind as in lying to for action. —It can be ranged from bow to quarter, ſo as to bring a broadſide to bear in a circuit of above 10 points of the compaſs on each ſide.—It is no more expenſive in ammunition than the old guns of two thirds leſs weight of ſhot; and it requires very few hands above the complement neceſſary for navigating merchant-ſhips; and increaſes the ſtrength of privateers crews, by expoſing few hands at the guns, and augmenting the number at ſmall arms.

“Though the carronade cannot, ſtrictly ſpeaking, throw its ſhot to an equal diſtance with a longer gun; yet, from the fitneſs of the ſhot to its cylinder, the powers of this gun will greatly ſurpaſs the expectations of ſuch as are not intimately acquainted with the effects of the elaſtic force of fired powder, ſince, with $\frac{1}{12}$th part of the weight of its ball, at very ſmall elevations, it will range its ſhot to triple the diſtance at which ſhips generally engage, with ſufficient velocity for the greateſt execution, and with all the accuracy in its direction that can be attained from guns of greater lengths.

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* See *Carronade.*

46 Objections to its uſe anſwered.

"There have been two ſeeming diſadvantages imputed to this gun, which it does not merit, *viz.* the nicety of fitting the ſhot to the bore of the gun, and its incapacity to hold more than two ſhot at one charge. But as ſeamen have few opportunities of confirming themſelves in juſt opinions by experiments made on ſhore, and cannot, in that caſe, be fully converſant with the ſubject; the following looſe hints may not be inept towards removing theſe objections.

"It is an axiom in projectiles, That a ſhot cannot be impelled from a gun to any diſtance in a direction truly parallel to the axis of the cylinder of the piece, or what is commonly called *point blank*, ariſing from ſeveral well-known cauſes: for, however juſt may be the cylinder, and however perfect and ſmooth may be the ſphere of its correſponding ſhot, and admitting that the impulſe of the powder acts through the centre of gravity of the ſhot, and alſo that the ſhot conſequently leaves the piece *in a direction parallel to the axis of its cylinder*; yet is the ſhot no ſooner diſcharged, but it becomes more or leſs inflected by its *gravity*, and deflected, according to its velocity, by the *reſiſtance of the air and wind.*

"Theſe irregularities are of little importance in cloſe ſea-fights, and, being the effect of natural cauſes, are common to all. Beſides theſe, the deviation of a ſhot from its true direction, is further augmented by the windage between the cylinder and its ſhot; but the greateſt uncertainty in the flight of a ſhot, making allowance for the action of its gravity, and the air's reſiſtance, ſprings from the defects of the ſhot itſelf. Round-ſhot for ſhip-guns are ſeldom nicely examined; and, unleſs they are caſt *ſolid and truly globular*, and free of all hollows, roughneſs, and other outſide blemiſhes, and well fitted to the gun, cannot even *be diſcharged in the direction of the axis of the piece;* to the diſappointment of thoſe that uſe ſuch, and to the diſcredit of the gun-founder, however juſtly the piece is viewed, or diſparted; but, being impelled againſt the ſurface of the cylinder, bounds and rebounds from ſide to ſide, acquires a rotatory motion, and when caſt hollow withal, and breaking within the cylinder before diſcharge, (which ſometimes happens, eſpecially with double charges), never fails to injure: and, when often repeated, may at laſt burſt the very beſt guns.—Round-ſhot ſhould not be taken on board a ſhip, without being examined as to its ſhape and ſurface, gaged for its ſize to the caliber of the gun, and weighed that it be not above or below the ſtandard more than half an ounce in the pound of its reſpective caliber: good ſhot then, being of the ſame importance to all guns, removes the firſt objection.

"If the direction of the flight of a ſhot to its object is affected by ſo many ſeeming trivial cauſes, how much more uncertain muſt it be, when two or more ſhot are diſcharged together from one gun? for the ſhot next the powder being impelled with more celerity than that immediately before it, ſtrikes againſt it after diſcharge, and ſometimes ſhivers itſelf to pieces, and never fails to change obliquely the direction of both; and this happens with round and double-headed, &c. and all double charges; and which, from their various figures, cannot reach an object at the ſame elevations with the round-ſhot; eſpecially when theſe other ſhots are of greater weight than the round, which is often the caſe. However frightful a broadſide with double charges may appear at ſea, more confuſion is created by them, and more time loſt *within board*, by the ſtrain and exceſſive recoil, than real damage done *without board* by the additional charge: for upon a trial on ſhore, where the effect can be traced, it will be found, that, at 100 yards diſtance, more ſhot will take place within a ſmall compaſs by ſingle than by double charges; and the charges will be oftener repeated in a given time, without heating the gun; and theſe facts being eſtabliſhed, remove alſo the ſecond objection."

The following account of the proof of one of theſe guns will perhaps ſerve to give a more adequate idea of the great uſefulneſs of them, than any deſcription:

"On Monday, Oct. 4. 1779, there was an experiment made at Carron, before the earl of Dunmore, &c. &c. with a 68 pounder carronade, nearly of the weight of a Britiſh navy 12-pounder gun, and charged with the ſame quantity (viz. 6 lb. of powder.—The carronade was mounted, on its proper carriages, into a port of the dimenſions of a 74 gun ſhip's lower-deck port; was pointed without elevation, at a centre of eight inches diameter, marked on a bulk's head of the thickneſs of two feet five inches ſolid wood, at 163 yards diſtance; behind which, at 168 yards, there was another bulk's head of two feet four inches thick; and behind that again, at 170 yards diſtance, a bank of earth. The ſhot pierced the bulk's head each time, and was buried from three to four feet into the bank, and the ſplinters were thrown about to a conſiderable diſtance on all ſides.

1ſt ſhot	ſtruck	1 foot 7 inches below the horizontal line,		and	5 feet	——	from	the mark.
2d ditto	ditto	2 feet ditto, ——	ditto,	and	2 ditto	——	from	ditto.
3d do.	do.	through the horizonal line		and	3 do.	4 inches	from	do.
4th do.	do.	ditto —— ——	do.	and	2 do.	4 ditto	from	do.
5th do.	do.	ditto —— ——	do.		2 do.	10 do.	from	do.
6th do.	do.	2 inches below—— ——	do.		——	10 do.	from	do.
7th do.	do.	touched the lower part of ditto	do.		——	7 do.	from	do.
8th do.	do.	2 inches below —— ——	do.		——	10 do.	from	do.
9th do.	do.	2 feet below —— ——	do.		1 foot	9 do.	from	do.
10th do.	do.	3 inches below —— ——	do.		——	3 do.	from	do.

"The carronade was laid each time by the views without an inſtrument; and the ſhot were all to the left of the mark, owing to a ſmall error in diſparting the views; the third, fourth, and fifth ſhot, made one fracture, as did alſo ſixth, ſeventh, and eighth, and the ſixth and eighth ſtruck the ſame ſpot.

"The Carronade was eaſily worked with four men, and may be readily worked and diſcharged on board a ſhip twice a minute with ſix men.—With ſix pound weight of powder the ſhot was impelled with a velocity of 1400 feet a ſecond."

47
Deſcription of rifled ordnance.

We have already ſeen of how much conſequence rifle-barrels are in order to bring the art of gunnery to perfection; as they enlarge the ſpace in which the ball will fly without any lateral deflection to three or four times its uſual quantity. This improvement, however, till very lately, only took place in muſket-barrels. But in the beginning of the year 1774, Dr Lind, and Captain Alexander Blair of the 69th regiment of foot, invented a ſpecies of rifled field-pieces. They are made of caſt-iron; and are not bored like the common pieces, but have the rifles moulded on the core, after which they are cleaned out and finiſhed with proper inſtruments.

Guns of this conſtruction, which are intended for the field, ought never to be made to carry a ball of above one or two pounds weight at moſt; a leaden bullet of that weight being ſufficient to deſtroy either man or horſe.—A pound-gun of this conſtruction, of good metal, ſuch as is now made by the Carron-company, need not weigh above an hundred pounds weight, and its carriage about another hundred. It can, therefore, be eaſily tranſported from place to place, by a few men; and a couple of good horſes may tranſport ſix of theſe guns and their carriages, if put into a cart.

But, for making experiments, in order to determine the reſiſtance which bodies moving with great velocities meet with from the air, a circumſtance to which theſe guns are particularly well adapted, or for annoying an enemy's ſappers that are carrying on their approaches towards a beſieged place, a larger caliber may be uſed.

Fig. 9.

The length of the gun being divided into ſeven equal parts, the length of the firſt reinforce AB is two of theſe parts; the ſecond BC, one and $\frac{15}{16}$ of the diameter of the caliber; the chaſe CD, four wanting $\frac{15}{16}$ of the diameter of the caliber.

The diſtance from the hind-part of the baſe-ring A to the beginning of the bore, is one caliber and $\frac{3}{16}$ of a caliber. The trunnions TT are each a caliber in breadth, and the ſame in length; their centres are placed three-ſevenths of the gun's length from the hind part of the baſe-ring, in ſuch a manner that the axis of the trunnions paſs through the centre line of the bore, which prevents the gun from kicking, and breaking its carriage. The length of the caſcabel is one caliber and $\frac{13}{16}$ of a caliber.

The caliber of the gun being divided into 16 equal parts;

The thickneſs of metal at the baſe-ring A from the bore, is	18,5
At the end of the firſt reinforce ring B	17
At the ſame place, for the beginning of the ſecond reinforce	17
At the end of the ſecond reinforce C	15
At the ſame place, for the beginning of the chaſe *c*. - - - -	13,75
At the end of the chaſe or muzzle, the mouldings *a* D excluded - - -	9
At the ſwelling of the muzzle *b* -	12
At the muzzle-fillet *c* - -	9,5
At the extreme moulding D -	8
Baſe-ring - - -	5,5
Ogee next the baſe-ring *d* - -	5,5
The aſtragal or half-round - -	4,75
Its fillet - - - - - -	1
Total aſtragal and fillets at the ventfield *e*	4
Firſt reinforce ring B - -	4,5
Second reinforce ring C - -	3,5
Its ogee - - -	3
Its aſtragal - - -	1,5
And its fillet - - -	1
The muzzle aſtragal, and fillet *a* -	4
Breadth of the fillet at the baſe-ring	1
Diſtance of the centre of the button from the fillet at the baſe-ring - -	5
Breadth of the fillet at the button -	1
Diameter of the fillet at the button -	18
Diſtance of the centre of the button from its fillet - - -	12
Diameter of the button E - -	18
Diameter of its neck - - -	10,5

The vent ſhould be placed about half an inch from the bottom of the chamber or bore, that the cartridge may be pricked, leſt ſome of the bottoms of the cartridges ſhould be left in when the gun is ſponged, a circumſtance which might retard the firing till the ſhot be again drawn (which is no eaſy matter), and the gun be cleaned out. From ſome experiments of colonel Deſaguiliers and Mr Muller, it has been imagined, that the powder never has ſo ſtrong an effect as when it is fired cloſe to the bottom of the bore; yet it is found, by the experiments of Count de la Lippe, to have the greateſt effect when fired near to the middle of the charge. This he proved by firing with tubes, introduced at a vent bored through the button and breech of the gun, of different lengths, ſo as to reach the different parts of the powder. In the ſame manner a muſket or fowling-piece is found to puſh more when the touch-hole is placed at ſome little diſtance from the bottom of the bore; which ariſes from nothing but the powder's acting with more force, by being inflamed to greater advantage; conſequently, in this caſe, the ſame quantity of powder will have a greater effect, than when the touch-hole is placed at the bottom of the bore, which may be of ſome uſe in huſbanding the powder.

The above dimenſions are taken from ſome elegant $\frac{1}{2}$ pound guns, which were made for the prince of Auſturias by the Carron company.

The rifles make one ſpiral turn in the length of the bore; but go no nearer to the breech, in their full ſize, than two calibers: and then terminate with a gentle ſlop in half a caliber more, ſo as not to prevent the cartridge with the powder from being eaſily ſent home to the bottom of the gun, which would otherwiſe conſtantly happen with the flannel cartridges, and even ſometimes with paper ones, if not made to enter very looſely. The ſhape of the rifles is ſemicircular, their breadth being equal to the diameter, which is $\frac{1}{16}$ of a caliber, and their depth equal to the ſemidiameter, or $\frac{15}{16}$ of a caliber.

The bullets, fig. 10. are of lead, having ſix knobs caſt on them to fit the rifles of the gun. Being thus made of ſoft metal, they do not injure the rifles; and may alſo ſave an army the trouble of carrying a great quantity of ſhot about with them, ſince a ſupply of lead may be had in moſt countries from roofs, &c. which can be caſt into balls as occaſion requires. Lead likewiſe being of greater ſpecific gravity than caſt-iron, flies to a much greater diſtance.

Rifled ordnance of any caliber might be made to carry iron ſhot for battering or for other purpoſes; provided holes, that are a little wider at their bottom than at their upper parts, be caſt in a zone round the ball, for receiving afterwards leaden knobs to fit the rifles of the cannon; by which means, the iron ſhot will have its intended line of direction preſerved, without injuring the rifles more than if the whole line was of lead, the rotatory motion round its axis, in the line of its direction (which corrects the aberration) being communicated to it by the leaden knobs, following the ſpiral turn of the rifles in its progreſs out of the gun. It is particularly to be obſerved, that the balls muſt be made to go eaſily down into the piece, ſo that the cartridge with the powder and the bullet may be both ſent home together, with a ſingle puſh of the hand, without any wadding above either powder or ball; by which means, the gun is quickly loaded, and the ball flies farther than when it is forcibly driven into the gun, as was found from many experiments. The only reaſon why, in common rifled muſkets, the bullets are rammed in forcibly, is this, that the zone of the ball which is contiguous to the inſide of the bore may have the figure of the rifles impreſſed upon it, in ſuch a manner as to become part of a male ſcrew, exactly fitting the indents of the rifle, which is not at all neceſſary in the preſent caſe, the figure of the rifles being originally caſt upon the ball. Theſe knobs retard the flight of the bullet in ſome degree: but this ſmall diſadvantage is fully made up by the eaſe with which the gun is loaded, its ſervice being nearly as quick as that of a common field-piece; and the retardation and quantity of the whirling motion which is communicated to the bullet being conſtantly the ſame, it will not in the leaſt affect the experiments made with them, in order to determine the reſiſtance of the air.

48
Sector and telescope belonging to this kind of ordnance.

In order to hit the mark with greater certainty than can be done in the common random method, theſe guns are furniſhed with a ſector, the principal parts of which are, 1. The limb, which is divided in ſuch a manner as to ſhow elevations to 15 or 20 degrees. The length of the radius is five inches and an half, and its nonius is ſo divided as to ſhow minutes of a degree. 2. The teleſcope, AB, fig. 11. an achromatic refractor, is ſeven inches in length (ſuch as is uſed in Hadley's quadrants, that are fitted for taking diſtances of the moon from the ſun or ſtars, in order to obtain the longitude at ſea), having croſs hairs in it. 3. The parallel cylindric bar, CD, is $\frac{4}{15}$ of an inch in diameter, having two rectangular ends EF, each half an inch ſquare and an inch long. On one ſide of the end next the limb of the ſector, is a mark correſponding to a ſimilar one in the hinder cock of the gun with which it muſt always coincide when placed on the gun. The length of the parallel bar, together with its ends, is ſeven inches. This bar is fixed to the ſector by means of two hollow cylinders, G, H, which allow the ſector a motion round the bar. There is a finger-ſcrew, *a*, upon the hollow cylinder, G, which is ſlit, in order to tighten it at pleaſure upon the bar. 4 The circular level I, fig. 11. and 12. for ſetting the plane of the ſector always perpendicular when placed upon the gun, is $\frac{3}{4}$ of an inch in diameter. There is a ſmall ſcrew, *d*, to adjuſt the level at right angles to the plane of the ſector. 5. The finger-ſcrew *b*, for fixing the index of the ſector at any particular degree of elevation propoſed.

The line of collimation (that is, the line of viſion cut by the interſecting point of the two croſs-hairs in the teleſcope (muſt be adjuſted truly parallel to the bar of the ſector when at 0 degrees. This is done by placing the ſector ſo that the vertical hair may exactly cover ſome very diſtant perpendicular line. If it again covers it when the ſector is inverted, by turning it half round upon the bar, which has all the while been kept ſteady and firm, that hair is correct; if not, correct half the error by means of the ſmall ſcrews, c d e, fig. 11. and 13. at the eye-end of the teleſcope, and the other half by moving the bar; place it again to cover the perpendicular line, and repeat the above operation till the hair covers it in both poſitions of the ſector. Then turn the ſector, till the horizontal hair cover the ſame perpendicular line, and turning the ſector half round on its bar, correct it, if wrong, in the ſame manner as you did the vertical hair.

N. B. Of the four ſmall ſcrews at the eye-end of the teleſcope, thoſe at the right and left hand move whatever hair is vertical, and thoſe at top or underneath move whatever hair is horizontal.

On the ſide of the gun upon the firſt reinforce, are caſt two knobs, F, fig. 9. and 14. having their middle part diſtant from each other ſix inches, for fixing on the braſs cocks, A, fig 14. and 15. which receive the rectangular ends of the parallel cylindric bar of the ſector, when placed on the gun.

The next adjuſtment is to make the parallel bar, and line of collimation of the teleſcope, when ſet at 0 degrees, parallel to the bore of the gun, and conſequently to the direction of the ſhot. The gun being loaded, the cartridge picked, and the gun primed, place the ſector in the cocks of the gun; and having firſt ſet the ſector to what elevation you think neceſſary, bring the interſection of the croſs hairs in the teleſcope upon the centre of the mark, the limb of the ſector being ſet vertical by means of the circular level, and then take off the ſector without moving the gun. Fire the gun; and if the bullet hits any where in the perpendicular line, paſſing through the centre of the mark, the line of collimation of the teleſcope and direction of the ſhot agree. But if it hit to the right of the mark, ſo much do they differ. In order to correct which, bring the gun into the ſame poſition it was before firing, and ſecure it there. Then file away as much of the fore-cock, on the ſide next the gun, as will let the interſection of the croſs-hair fall ſomewhere on the line paſſing perpendicularly through the point where the ſhot fell; and it is then adjuſted in that poſition, ſo much being filed off the ſide of the cock at *a*, fig. 14. and 18. as will allow the ſide *b* to be ſcrewed cloſer, that the ends of the parallel bar may have no ſhake in the cocks. To correct it in the other poſition, and ſo to find the true 0 degrees of the gun, that is, to bring the line of collimation of the teleſcope, parallel-bar, and bore of the gun, truly parallel to each other, repeat the above with the trunnions perpendicular to the horizon, the ſector being turned a quarter round upon its bar, ſo as to bring its plane vertical. The deviation of the ſhot found in this way is corrected by deepening one of the cocks, ſo that the vertical hair of the teleſcope may be brought to cover the line paſſing perpendicularly through the point where the bullet hits; the gun being placed in the ſame poſition it was in before it was fired. This adjuſtment being repeated two or three times, and any error that remains being corrected, the gun is fit to be mounted on its carriage for ſervice. It is to be obſerved, that this ſector will fit any gun, if the cocks and rectangular ends, &c. of the parallel bar be of the above dimenſions, and will be equally applicable to all ſuch pieces whoſe cocks have been adjuſted, as if it had been adjuſted ſeparately with each of them. And if the ſector be ſet at any degree of elevation, and the gun moved ſo as to bring the interſection of the croſs hairs on the object to be fired at (the limb of the ſector being vertical), the bore of the gun will have the ſame elevation above it, in the true direction of the ſhot, whatever poſition the carriage of the gun is ſtanding in. A teleſcope with croſs hairs, fixed to a common rifled muſket, and adjuſted to the direction of the ſhot, will make any perſon, with a very little practice, hit an object with more preciſion than the moſt experienced markſman.

49 Their carriages.

For garriſon-ſervice, or for batteries, the ſhip or garriſon carriage, with two iron ſtaples on each ſide to put through a couple of poles to carry theſe guns from place to place with more diſpatch, are as proper as any. But, for the field, a carriage like that at fig. 16. where the ſhafts puſh in upon taking out the iron pins *a b*, and moving the croſs bar A, upon which the breech of the gun reſts, as far down as the ſhafts were puſhed in, is the propereſt, ſince the whole can then be carried like a hand-barrow, over ditches, walls, or rough ground, all which may be eaſily underſtood from the figure.

The principal advantage that will accrue from the uſe of rifled ordnance, is the great certainty with which any object may be hit when fired at with them, ſince the ſhot deviates but little from its intended line of direction, and the gun is capable of being brought to bear upon the object with great exactneſs, by means of the teleſcope of croſs-hairs.

50 Mortars deſcribed.

The other pieces of artillery commonly made uſe of are mortars, howitzes, and royals. The mortars are a kind of ſhort cannon of a large bore, with chambers for the powder, and are made of braſs or iron. Their uſe is to throw hollow ſhells filled with powder, which falling on any building, or into the works of a fortification, burſt, and with their fragments deſtroy every thing near them. Carcaſes are alſo thrown out of them; which are a ſort of ſhells with five holes, filled with pitch and other materials, in order to ſet buildings on fire; and ſometimes baſkets full of ſtones, of the ſize of a man's fiſt, are thrown out of them upon an enemy placed in the covert-way in the time of a ſiege. Of late the ingenious General Deſaguliers has contrived to throw bags filled with grapeſhot, containing in each bag from 400 to 600 ſhot of different dimenſions, out of mortars. The effect of theſe is tremendous to troops forming the line of battle, paſſing a defile, or landing, &c. the ſhot pouring down like a ſhower of hail on a circumference of above 300 feet.

Mortars are chiefly diſtinguiſhed by the dimenſions of their bore; for example, a 13th-inch mortar is one the diameter of whoſe bore is 13 inches, &c.—The land-mortars are thoſe uſed in ſieges, and of late in battles. They are mounted on beds, and both mortar and bed are tranſported on block carriages. There is likewiſe a kind of land-mortars mounted on travelling carriages, invented by count Bukeburg, which may be elevated to any degree: whereas all the Engliſh mortars are fixed to an angle of 45°. This cuſtom, however, does no appear to have any foundation in reaſon. In a ſiege, ſhells ſhould never be thrown with an angle of 45 degrees, excepting one caſe only; that is, when the battery is ſo far off, that they cannot otherwiſe reach the works: for when ſhells are thrown out of the trenches into the works of a fortification, or from the town into the trenches, they ſhould have as little elevation as poſſible, in order not to bury themſelves, but to roll along the ground, whereby they do much more damage, and occaſion a much greater conſternation among the troops, than if they ſunk into the ground. On the contrary, when ſhells are thrown upon magazines, or any other buildings, the mortars ſhould be elevated as high as poſſible, that the ſhells may acquire a greater force in their fall, and conſequently do more execution.

There are other kinds of mortars, called *partridge-mortars*, *hand-mortars*, and *firelock-mortars*; which laſt are alſo called *bombards*. The partridge-mortar is a common one, ſurrounded with 12 other little mortars bored round its circumference, in the body of the metal; the middle one is loaded with a ſhell, and the others with grenades. The vent of the large mortar being fired, communicates its fire to the reſt; ſo that both the ſhell and grenades go off at once. Hand-mortars were frequently uſed before the invention of cohorns. They were fixed at the end of a ſtaff four feet and a half long, the other end being ſhod with iron to ſtick in the ground; and while the bombardier with one hand elevated it at pleaſure, he fired it with the other. The firelock mortars, or bombards, are ſmall mortars fixed to the end of a firelock. They are loaded as all common firelocks are; and the grenade, placed in the mortar at the end of the barrel, is diſcharged by a flint-lock. To prevent the recoil hurting the bombardier, the bombards reſt on a kind of halberd made for that purpoſe.

The chamber in mortars is the place where the powder is lodged. They are of different forms, and made variouſly by different nations; but the cylindric ſeems to be preferable to any other form.

51 Howitzes' and royals.

The howitz is a kind of mortar mounted on a field-carriage like a gun: it differs from the common mortars in having the trunnions in the middle, whereas thoſe of the mortar are at the end. The conſtruction of howitzes is as various and uncertain as that of mortars, excepting that the chambers are all cylindric. They are diſtinguiſhed by the diameter of their bore; for inſtance, a 10-inch howitz is that which has a bore of 10 inches diameter, and ſo of others. They were much more lately invented than mortars, and indeed are plainly derived from them.

Royals are a kind of ſmall mortars, which carry a ſhell whoſe diameter is 5.5 inches. They are mounted on beds in the ſame way as other mortars.

52
Parts of a mortar.

Fig. 17. repreſents a mortar; and the names of its parts are as follow.

AB, the whole length of the mortar.
AC, the muzzle.
CD, chace.
DE, reinforce.
EF, breech.
GA, trunnions.
a, vent.
b, dolphin.
cd, vent-aſtragal and fillets.
de, breech-ring and ogee.
fg, reinforce-ring and ogee.
gh, reinforce-aſtragal and fillets.
ik, muzze-aſtragal and fillets.
kl, muzzle-ring and ogee.
lm, muzzle mouldings.
n, ſhoulders.

Interior parts.

o, chamber.
p, bore.
q, mouth.
r, vent.

The mortar-beds are formed of very ſolid timber, and placed upon very ſtrong wooden frames, fixed in ſuch a manner that the bed may turn round. The fore-part of theſe beds is an arc of a circle deſcribed from the centre on which the whole turns.

53
Inſtruments uſed in the loading cannon.

There are ſeveral inſtruments employed in the loading of cannon. The names of theſe are as follow:

1. The lantern or ladle, which ſerves to carry the powder into the piece, and which conſiſts of two parts, viz. of a wooden box, appropriated to the caliber of the piece for which it is intended, and of a caliber and a half in length with its vent; and of a piece of copper nailed to the box, at the height of a half caliber.—This lantern muſt have three calibers and a half in length, and two calibers in breadth, being rounded at the end to load the ordinary pieces.

2. The rammer is a round piece of wood, commonly called a *box* faſtened to a ſtick 12 feet long, for the pieces from 12 to 33 pounders; and 10 for the 8 and 4 pounders; which ſerve to drive home the powder and ball to the breech.

3. The ſpunge is a long ſtaff or rammer, with a piece of ſheep or lamb-ſkin wound about its end, to ſerve for ſcouring the cannon when diſcharged, before it be charged with freſh powder; to prevent any ſpark of fire from remaining in her, which would endanger the life of him who ſhould load her again.

4. Wad-ſcrew conſiſts of two points of iron turned ſerpent-wiſe, to extract the wad out the pieces when one wants to unload them, or the dirt which had chanced to enter into it.

5. The boteſeux are ſticks two or three feet long, and an inch thick, ſplit at one end, to hold an end of the match twiſted round it, to fire the cannon.

6. The priming-iron is a pointed iron-rod, to clear the touch-hole of the pieces of powder or dirt; and alſo to pierce the cartridge, that it may ſooner take fire.

7. The primer, which muſt contain a pound of powder at leaſt, to prime the pieces.

8. The quoin of mire, which are pieces of wood with a notch on the ſide to put the fingers on, to draw them back or puſh them forward when the gunner points his piece. They are placed on the ſole of the carriage.

9. Leaden-plates, which are uſed to cover the touch-hole, when the piece is charged, leſt ſome dirt ſhould enter it and ſtop it.

54
Method of managing them.

Before charging the piece, it is well ſponged, to clean it of all filth and dirt withinſide; then the proper weight of gunpowder is put in and rammed down; care being taken that the powder be not bruiſed in ramming, which weakens its effect; it is then run over by a little quantity of paper, hay, or the like; and laſtly, the ball is thrown in.

To point, level, or direct the piece, ſo as to play againſt any certain point, is done by the help of a quadrant with a plummet: which quadrant conſiſts of two branches made of braſs or wood; one about a foot long, eight lines broad, and one line in thickneſs; the other four inches long, and the ſame thickneſs and breadth as the former. Between theſe branches is a quadrant, divided into 90 degrees, beginning from the ſhorter branch, and furniſhed with thread and plummet.

The longeſt branch of this inſtrument is placed in the cannon's mouth, and elevated or lowered till the thread cuts the degree neceſſary to hit the propoſed object. Which done, the cannon is primed, and then ſet fire to. The method by the ſector, however, propoſed by Dr Lind, is certainly in all caſes to be preferred.

A 24 pounder may very well fire 90 or 100 ſhots every day in ſummer, and 60 or 75 in winter. In caſe of neceſſity it may fire more; and ſome French officers of artillery aſſure, that they have cauſed ſuch a piece to fire every day 150 ſhots in a ſiege.—A 16 and a 12 pounder fire a little more, becauſe they are eaſier ſerved. There have even been ſome occaſions where 200 ſhots have been fired from theſe pieces in the ſpace of nine hours, and 138 in the ſpace of five. In quick firing, tubes are made uſe of. They are made of tin; and their diameter is two-tenths of an inch, being juſt ſufficient to enter into the vent of the piece. They are about ſix inches long, with a cap above, and cut ſlanting below, in the form of a pen; the point is ſtrengthened with ſome ſolder, that it may pierce the cartridge without bending. Through this tube is drawn a quick-match, the cap being fitted with mealed powder moiſtened with ſpirits of wine. To prevent the mealed powder from falling out by carriage, a cap of paper or flannel ſteeped in ſpirits of wine is tied over it. To range pieces in a battery, care muſt be taken to reconnoitre well the ground where it is to be placed, and the avenues to it. The pieces muſt be armed each with two lanterns or ladles, a rammer, a ſpunge, and two priming-irons. The battery muſt alſo be provided with carriages, and other implements, neceſſary to remount the pieces which the enemy ſhould chance to diſmount.

To ſerve expeditiouſly and ſafely a piece in a battery, it is neceſſary to have to each a ſack of leather, large enough to contain about 20 pounds of powder to charge the lanterns or ladles, without carrying them to the magazine; and to avoid thereby making thoſe trains of powder in bringing back the lantern from the magazine, and the accidents which frequently happen thereby.

A battery of three pieces muſt have 30 gabions, becauſe ſix are employed on each of the two ſides or epaulments, which make 12, and nine for each of the two merlons.

There ought to be two gunners and ſix ſoldiers to each piece, and an officer of artillery.

The gunner poſted on the right of the piece muſt take care to have always a pouch full of powder and two priming irons: his office is to prime the piece, and load it with powder. The gunner on the left fetches the powder from the little magazine, and fills the lantern or ladle which his comrade holds; after which, he takes care that the match be very well lighted, and ready to ſet fire to the piece at the firſt command of the officer.

There are three ſoldiers on the right and three on the left of the piece. The two firſt take care to ram and ſpunge the piece, each on his ſide. The rammer and ſpunge are placed on the left, and the lantern or ladle on the right. After having rammed well the wad put over the powder and that put over the bullet, they then take each a handſpike, which they paſs between the foremoſt ſpokes of the wheel, the ends whereof will paſs under the head of the carriage, to make the wheel turn round, leaning on the other end of the handſpike, towards the embraſure.

It is the office of the ſecond ſoldier on the right to provide wad, and to put it into the piece, as well over the powder as over the bullet; and that of his comrade on the left to provide 50 bullets, and every time the piece is to be charged to fetch one of them and put it into the piece after the powder has been rammed. Then they both take each an handſpike, which they paſs under the hind part of the wheel, to puſh it in battery.

The officer of artillery muſt take care to have the piece diligently ſerved.

In the night he muſt employ the gunners and ſoldiers, who ſhall relieve thoſe who have ſerved 24 hours to repair the embraſures.

If there be no water near the battery, care muſt be taken to have a caſk filled with it, in which to dip the ſpunges and cool the pieces every 10 or 12 rounds.

The carriage for a mortar of 12 inches of diameter muſt be 6 feet long, the flaſks 12 inches long and 10 thick. The trunnions are placed in the middle of the carriage.

The carriage of an 18 inch mortar muſt be 4 feet long, and the flaſks 11 inches high and 6 thick.

To mount the mortars of new invention, they uſe carriages of caſt iron.

55
Method of managing mortars.

In Germany, to mount mortars from 8 to 9 inches, and carry them into the field, and execute them horizontally as a piece of cannon, they make uſe of a piece of wood 8 feet 2 inches long, with a hole in the middle to lodge the body of the mortar and its trunnions as far as their half diameter, and mounted on two wheels four feet high, to which they join a vantrain proportioned to it, and made like thoſe which ſerve to the carriages of cannons.

Having mounted the mortar on its carriage, the next thing is to caliber the bomb by means of a great caliber, the two branches whereof embrace the whole circumference of the bomb: theſe two branches are brought on a rule where the different calibers are marked, among which that of the bomb is found.

If no defect be found in the bomb, its cavity is filled, by means of a funnel, with whole gunpowder; a little ſpace or liberty is left, that when a ſufee or wooden tube, of the figure of a truncated cone, is driven thro' the aperture (with a wooden mallet, not an iron one for fear of accident), and faſtened with a cement made of quicklime, aſhes, brick-duſt, and ſteel filings, worked together in a glutinous water, or of four parts of pitch, two of colophony, one of turpentine, and one of wax, the powder may not be bruiſed. This tube is filled with a combuſtible matter made of two ounces of nitre, one of ſulphur, and three or more of gunpowder duſt well rammed. See Fuzee.

This fuſee ſet on fire burns ſlowly till it reaches the gunpowder; which goes off at once, burſting the ſhell to pieces with incredible violence. Special care, however, muſt be taken that the fuſee be ſo proportioned as that the gunpowder do not take fire ere the ſhell arrives at the deſtined place; to prevent which, the fuſee is frequently wound round with a wet clammy thread.

Batteries conſiſt,—1. Of an epaulment to ſhelter the mortars from the fire of the enemy. 2. Of platforms on which the mortars are placed. 3. Of ſmall magazines of powder. 4. Of a boyau, which leads to the great magazine. 5. Of ways which lead from the battery to the magazine of bombs. 6. Of a great ditch before the epaulment. 7. Of a berm or retraite.

The platforms for mortars of 12 inches muſt have 9 feet in length and 6 in breadth.—The lambourds for common mortars muſt be four inches thick; thoſe of a concave chamber of 8 lb. of powder, 5 inches; thoſe of 12 lb. 6 inches; thoſe of 18lb. 7 inches or thereabouts. Their length is at diſcretion, provided there be enough to make the platforms 9 feet long.—The forepart of the platform will be ſituated at two feet diſtance from the epaulment of the battery.—The bombardiers, to ſhelter themſelves in their battery, and not be ſeen from the town beſieged, raiſe an epaulment of 7 feet or more high, which epaulment has no embraſures.

To ſerve expeditiouſly a mortar in battery, there are required,—five ſtrong handſpikes; a dame or rammer, of the caliber of the conic chamber, to ram the wad and the earth; a wooden knife a foot long, to place the earth round the bomb; an iron ſcraper two feet long, one end whereof muſt be four inches broad and roundwiſe, to clean the bore and the chamber of the mortar, and the other end made in form of a ſpoon to clean the little chamber; a kind of brancard to carry the bomb, a ſhovel, and pick-ax.

The officer who is to mind the ſervice of the mortar muſt have a quadrant to give the degrees of elevation.

Five bombardiers, or others, are employed in that ſervice; the firſt muſt take care to fetch the powder to charge the chamber of the mortar, putting his priming-iron in the touch-hole before he charges the chamber;

and never going to fetch the powder before he has aſked his officer at what quantity of powder he deſigns to charge, becauſe more or leſs powder is wanted according to the diſtance where it is fired; the ſame will take care to ram the wad and earth, which another ſoldier puts in the chamber.

The ſoldier on the right will put again two ſhovelful of earth in the bottom of the bore, which ſhould be likewiſe very well rammed down.

This done, the rammer or dame is returned into its place againſt the epaulment on the right of the mortar: he takes an handſpike in the ſame place to poſt himſelf behind the carriage of the mortar, in order to help to puſh it into battery: having laid down his handſpike, he takes out his priming-iron, and primes the touch-hole with fine powder.

The ſecond ſoldier on the right and left will have by that time brought the bomb ready loaded, which muſt be received into the mortar by the firſt ſoldier, and placed very ſtrait in the bore or chaſe of the mortar.

The firſt on the right will furniſh him with earth to put round the bomb, which he muſt take care to ram cloſe with the knife given him by the ſecond on the left.

This done, each ſhall take a handſpike, which the two firſt on the right and left ſhall put under the pegs of retreat on the forepart, and the two behind under thoſe of the hindpart, and they together puſh the mortar in battery.

Afterwards the officer points or directs the mortar.

During that time, the firſt ſoldier takes care to prime the touch-hole of the mortar, without ramming the powder; and the laſt on the right muſt have the match ready to ſet fire to the fuſee of the bomb on the right, while the firſt is ready with his on the left to ſet fire to the touch-hole of the mortar, which he ought not to do till he ſees the fuſee well lighted.

The foremoſt ſoldiers will have their handſpikes ready to raiſe the mortar upright as ſoon as it has diſcharged, while the hindmoſt on the left ſhall with the ſcraper clean the bore and chamber of the mortar.

The magazine of powder for the ſervice of the battery ſhall be ſituated 15 or 20 paces behind, and covered with boards and earth over it.—The loaded bombs are on the ſide of the ſaid magazine, at five or ſix paces diſtance.

The officer who commands the ſervice of the mortar muſt take care to diſcover as much as poſſible with the eye the diſtance of the place where he intends to throw his bomb, giving the mortar the degree of elevation according to the judgment he has formed of the diſtance. Having thrown the firſt bomb, he muſt diminiſh or increaſe the degrees of elevation according to the place on which it ſhall fall. Several make uſe of tables to diſcover the different diſtances according to the differences of the elevations of the mortar, eſpecially the degrees of the quadrant from 1 to 45: but theſe, from the principles already laid down, muſt be fallacious.

56
Of the petard,

The petard is the next piece of artillery which deſerves our attention; and is a kind of engine of metal, ſomewhat in ſhape of a high-crowned hat, ſerving to break down gates, barricades, draw bridges, or the like works, which are intended to be ſurpriſed. It is very ſhort, narrow at the breech and wide at the muzzle, made of copper mixed with a little braſs, or of lead with tin.

The petards are not always of the ſame height and bigneſs: they are commonly 10 inches high, 7 inches of diameter a-top, and 10 inches at bottom. They weigh commonly 40, 45, and 50 pounds.

The madrier, on which the petard is placed, and where it is tied with iron circles, is of two feet for its greateſt width, and of 18 inches on the ſides, and no thicker than a common madrier. Under the madrier are two iron-bars paſſed croſſwiſe, with a hook, which ſerves to fix the petard.

To charge a petard 15 inches high, and 6 or 7 inches of caliber or diameter at the bore, the inſide muſt be firſt very well cleaned and heated, ſo that the hand may bear the heat; then take the beſt powder that may be found, throw over it ſome ſpirit of wine, and expoſe it to the ſun, or put it in a frying-pan; and when it is well dried, 5 lb. or 6 lb. of this powder is put into the petard, which reaches within three fingers of the mouth: the vacancies are filled with tow, and ſtopped with a wooden-tampion; the mouth being ſtrongly bound up with cloth tied very tight with ropes; then it is fixed on the madrier, that has a cavity cut in it to receive the mouth of the petard, and faſtened down with ropes.

Some, inſtead of gunpowder for the charge, uſe one of the following compoſition, *viz.* gunpowder ſeven pounds, mercury ſublimate one ounce, camphor eight ounces; or gunpowder ſix pounds, mercury ſublimate three ounces, and ſulphur three; or gunpowder ſix, beaten glaſs half an ounce, and camphor three quarters.

Before any of theſe pieces are appropriated for ſervice, it is neceſſary to have each undergo a particular trial of its ſoundneſs, which is called a *proof*, to be made by or before one authoriſed for the purpoſe, called the *proof-maſter*.

To make a proof of the piece, a proper place is choſen, which is to be terminated by a mount of earth very thick to receive the bullets fired againſt it, that none of them can run through it. The piece is laid on the ground, ſupported only in the middle by a block of wood. It is fired three times; the firſt with powder of the weight of the bullet, and the two others with $\frac{3}{4}$ of the weight; after which a little more powder is put in to ſinge the piece, and after this, water, which is impreſſed with a ſpunge, putting the finger on the touch-hole to diſcover if there be any cracks; which done, they are examined with the cat, which is a piece of iron with three graſps, diſpoſed in the form of a triangle, and of the caliber of the piece; then it is viſited with a wax-candle, but it is of very little ſervice in the ſmall pieces, becauſe if they be a little long the ſmoke extinguiſhes it immediately. See Plate CCXXIV.

57
Of ſmall arms.

Beſides the large pieces already mentioned, invented for the deſtruction of mankind, there are others called *ſmall guns*; *viz.* muſkets of ramparts, common muſkets, fuſils, carabines, muſketoons, and piſtols.

A muſket, or muſquet, is a fire-arm borne on the ſhoulder, and uſed in war, formerly fired by the application of a lighted match, but at preſent with a flint and lock. The common muſket is of the caliber of 20 leaden balls to the pound, and receives balls from 22 to 24: its length is fixed to 3 feet 8 inches from the muzzle to the touch-pan.

A fuſil, or firelock, has the ſame length and caliber, and ſerves at preſent inſtead of a muſket.

A carabine is a ſmall ſort of fire-arm, ſhorter than a fuſil, and carrying a ball of 24 in the pound, borne by the light-horſe, hanging at a belt over the left ſhoulder. This piece is a kind of medium between the piſtol and the muſket; and bears a near affinity to the arquebuſs, only that its bore is ſmaller. It was formerly made with a match-lock, but of late only with a flint-lock.

The muſquetoon is of the ſame length of the carabine, and the barrel poliſhed, and clean within. It carries five ounces of iron, or ſeven and an half of lead, with an equal quantity of powder.

The barrel of a piſtol is generally 14 inches long.

GUNPOWDER, a compoſition of ſaltpetre, ſulphur, and charcoal, mixed together and uſually granulated; which eaſily takes fire, and, when fired, rarifies or expands with great vehemence, by means of its elaſtic force.

It is to this powder we owe all the action and effect of guns, ordnance, &c. ſo that the modern military art, fortification, &c. in a great meaſure depend thereon.

Invention of GUNPOWDER. See GUN.

Method of making GUNPOWDER. Dr Shaw's receipt for this purpoſe is as follows: Take four ounces of refined ſaltpetre, an ounce of brimſtone, and ſix drams of ſmall coal: reduce theſe to a fine powder, and continue beating them for ſome time in a ſtone mortar with a wooden peſtle, wetting the mixture between whiles with water, ſo as to form the whole into an uniform paſte, which is reduced to grains, by paſſing it through a wire-ſieve fit for the purpoſe; and in this form being carefully dried, it becomes the common gunpowder.

For greater quantities mills are uſually provided, by means of which more work may be performed in one day than a man can do in a hundred.

The nitre or ſaltpetre is refined thus: Diſſolve four pounds of rough nitre as it comes to us from the Indies, by boiling it in as much water as will commodiouſly ſuffice for that purpoſe: then let it ſhoot for two or three days in a covered veſſel of earth, with ſticks laid acroſs for the cryſtals to adhere to. Theſe cryſtals being taken out, are drained and dried in the open air.

In order to reduce this ſalt to powder, they diſſolve a large quantity of it in as ſmall a proportion of water as poſſible; then keep it conſtantly ſtirring over the fire till the water exhales and a white dry powder is left behind.

In order to purify the brimſtone employed, they diſſolve it with a very gentle heat; then ſcum and paſs it through a double ſtrainer. If the brimſtone ſhould happen to take fire in the melting, they have an iron cover that fits on cloſe to the melting-veſſel, and damps the flame. The brimſtone is judged to be ſufficiently refined if it melts, without yielding any fetid odour, between two hot iron-plates, into a kind of red ſubſtance.

The coal for the making of gunpowder is either that of willow or hazel, well charred in the uſual manner, and reduced to powder. And thus the ingredients are prepared for making this commodity: but as theſe ingredients require to be intimately mixed, and as there would be danger of their firing if beat in a dry form, the method is to keep them continually moiſt, either with water, urine, or a ſolution of ſal ammoniac: they continue thus ſtamping them together for 24 hours; after which the maſs is fit for corning and drying in the ſun, or otherwiſe, ſo as ſeduloufly to prevent its firing.

Different kinds of GUNPOWDER. The three ingredients of gunpowder are mixed in various proportions according as the powder is intended for muſkets, great guns, or mortars: though theſe proportions ſeem not to be perfectly adjuſted or ſettled by competent experience.

Semienowitz, for mortars, directs an hundred pounds of ſaltpetre, twenty-five of ſulphur, and as many of charcoal; for great guns, an hundred pounds of ſaltpetre, fifteen pounds of ſulphur, and eighteen pounds of charcoal; for muſkets and piſtols, an hundred pounds of ſaltpetre, eight pounds of ſulphur, and ten pounds of charcoal. Miethius extols the proportion of one pound of ſaltpetre to three ounces of charcoal, and two or two and a quarter of ſulphur; than which, he affirms, no gunpowder can poſſibly be ſtronger. He adds, that the uſual practice of making the gunpowder weaker for mortars than guns, is without any foundation, and renders the expence needleſsly much greater: for whereas to load a large mortar, twenty-four pound of common powder is required, and conſequently, to load it ten times, two hundred and forty pound, he ſhows, by calculation, that the ſame effect would be had by one hundred and fifty pound of the ſtrong powder.

On this ſubject Mr Thomſon † obſerves, that almoſt all thoſe who have written upon gunpowder, particularly thoſe of the laſt century, have given different receipts for its compoſition; and he propoſes it as a query, Whether theſe differences have not ariſen from obſerving that ſome kinds of powder were better adapted to particular purpoſes than others, or from experiments made on purpoſe to aſcertain the fact? "There is one circumſtance (he ſays) that would lead us to ſuppoſe that this was the caſe. That kind of powder deſigned for mortars and great guns was weaker than that intended for ſmall arms: for if there is any foundation for theſe conjectures, it is certain, that the weakeſt powder, or the heavieſt in proportion to its elaſtic force, ought to be uſed to impel the heavieſt bullets; and particularly in guns that are imperfectly formed, where the vent is large, and the windage very great. I am perfectly aware (adds he), that an objection may here be made, viz. that the elaſtic fluid generated from gunpowder muſt be ſuppoſed to have the ſame properties very nearly, whatever may be the proportion of its ſeveral ingredients: and that therefore the only difference there can be in powder is, that one

† Phil. Tranſ. Vol. 71.

one kind may generate more of this fluid, and another leſs; and that when it is generated it acts in the ſame manner, and will alike eſcape, and with the ſame velocity, by any paſſage it can find. But to this I anſwer, that though the fluid may be the ſame, as it undoubtedly is, and though its denſity and elaſticity may be the ſame in all caſes, at the inſtant of its generation; yet in the exploſion, the elaſtic and unelaſtic parts are ſo mixed together, that I imagine the fluid cannot expand without taking the groſs matter along with it; and the velocity with which the flame iſſues at the vent is to be computed from the elaſticity of the fluid, and the denſity or weight of the fluid and groſs matter taken together, and not ſimply from the denſity and elaſticity of the fluid."

To increaſe the ſtrength of powder, Dr Shaw thinks it proper to make the grains conſiderably large, and to have it well ſifted from the ſmall duſt. We ſee that gunpowder, reduced to duſt, has little exploſive force; but when the grains are large, the flame of one grain has a ready paſſage to another, ſo that the whole parcel may thus take fire nearly at the ſame time, otherwiſe much force may be loſt, or many of the grains go away as ſhot unfired.

In the 71ſt volume of the Phil. Tranſ. Mr Thomſon gives an account of ſeveral attempts to augment the force of gunpowder by the addition of different ingredients. The power of ſteam has by many been overrated to ſuch a degree, as to be ſuppoſed capable of anſwering the purpoſes of gunpowder; but no attempts to accompliſh this have ever ſucceeded in any degree. Mr Thomſon attempted to combine the forces of ſteam and gunpowder together in the following manner. Having procured a number of air bladders of very ſmall fiſhes, he put different quantities of water into them from the ſize of a ſmall pea to that of a piſtol bullet, and tying them up with ſome very fine thread, hung them up to dry on the outſide. He then provided a number of cartridges made of fine paper, and filled them with a quantity of gunpowder equal to the uſual charge for a common horſeman's piſtol. He then loaded the piſtol with a bullet, fired it againſt an oaken plank about ſix feet from the muzzle, and obſerved the recoil and penetration of the bullet. He next tried the effect of one of theſe ſmall bladders of water when put among the gunpowder, but always found the force of the powder very much diminiſhed, and the larger the quantity of water the greater was the diminution; the report of the exploſion was alſo diminiſhed in a ſtill greater proportion than the force of the bullet or recoil. It being ſuppoſed that the bladder had burſt, and thus by wetting the gunpowder prevented it from taking fire, the experiment was repeated with highly rectified ſpirit of wine, but the diminution of the force was very little inferior to what it had been by water. Etherial oil of turpentine, and ſmall quantities of quickſilver were alſo tried, but with no better ſucceſs than before. Thinking, however, that the failure of the quickſilver might be owing to its having been too much in a body, the experiment was repeated with the metal diſperſed in ſmall particles through the powder. To accompliſh this diſperſion the more completely, 20 grains of Ethiops mineral were mixed very intimately with 145 grains of powder; but ſtill the force of the bullet was much leſs than if the powder had been uſed without any addition. As the exploſion of pulvis fulminans appears vaſtly ſuperior to that of gunpowder, ſome ſalt of tartar in its pureſt ſtate, was mixed in the proportion of 20 grains to 145 of powder; but on firing the piece, it was ſtill found that the force of the exploſion was leſſened. Sal ammoniac was next tried; which, under certain circumſtances, is found to produce a great quantity of air or elaſtic vapour; but on mixing 20 grains of it with 145 of gunpowder, the force of the exploſion was ſtill found to be diminiſhed. As moſt of the metals, when diſſolved in acids, particularly braſs in ſpirit of nitre, are found to produce much elaſtic vapour, it was thought worth while to try whether the force of powder could be augmented by this means. Twenty grains of braſs duſt were therefore mixed with 145 grains of powder; but ſtill the force of the exploſion was not augmented. In our author's opinion, however, neither braſs duſt nor Ethiops mineral diminiſh the force of the exploſion otherwiſe than by filling up the interſtices between the grains, obſtructing the paſſage of the flame, and thus impeding the progreſs of the inflammation. Thus it appears, that little hope remains of augmenting the force of gunpowder by any addition either of liquid or inflammable ſolids: the reaſon is obvious, viz. becauſe all of them, the liquids eſpecially, abſorb great quantities of heat before they can be converted into vapour; and this vapour, after it is formed, requires more heat to make it expand more forcibly than air: hence, as the effects of gunpowder depend entirely upon the emiſſion of a quantity of air, and its rarefaction by vehement heat, the power muſt be greatly diminiſhed by the abſorption of this heat, which ought to be ſpent in rarefying the air. Even ſolid bodies cannot be ſet on fire without a previous abſorption of heat to convert them into vapour*; but liquids have this property ſtill more than ſolids, as is explained under the articles CHEMISTRY, EVAPORATION, &c. and muſt therefore diminiſh the exploſive force ſtill more. Lime added to gunpowder, however, is ſaid to augment the power of the exploſion by one third.

In his experiments on gunpowder, Mr Thomſon had the curioſity to compare the ſtrength of aurum fulminans, when encloſed in a gun barrel, with that of common gunpowder; but his experiment only verified what has been found by others, viz. that this powder, which in the open air makes ſuch a very violent report, has in cloſe veſſels ſcarce any power, comparatively ſpeaking, either of exploſion or projecting a bullet. Mr Thomſon, however, taking it for granted that the power of aurum fulminans would be found much greater than that of gunpowder, took care to have a barrel of uncommon ſtrength prepared for the experiment. The weight of it was 7 lb. 5 oz.; the length 13,25 inches, and the width of the bore 0.55 inches. This barrel, being charged with 27,44 grains of aurum fulminans and two leaden bullets, which, together with the leather put about them to make them fit the bore without windage, weighed 427 grains: it was laid upon a chaffing-diſh of live coals at the diſtance of about ten feet from the pendulum, and the piece was directed againſt the centre of the pendulum. Some minutes elapſed before the powder exploded; but when it did ſo, the exploſion

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*See *Flame*.

did not much exceed the report of a well charged air-gun; and it was not till he ſaw the pendulum in motion, that Mr Thompſon could be perſuaded that the bullets had been diſcharged. On examination, however, it was found that nothing had been left in the barrel, and that the powder had probably been all exploded, as a great many particles of the revived metal were thrown about. From a calculation of the motion communicated to the pendulum, it was found that the velocity of the bullets had been about 428 feet in a ſecond: whence it appears that the power of aurum fulminans, compared with that of gunpowder, is only as 4 to 13 very nearly.

Method of trying and examining GUNPOWDER. There are two general methods of examining gunpowder; one with regard to its purity, the other with regard to its ſtrength. Its purity is known by laying two or three little heaps near each other upon white paper, and firing one of them. For if this takes fires readily, and the ſmoke riſes upright, without leaving any droſs or feculent matter behind, and without burning the paper, or firing the other heaps, it is eſteemed a ſign that the ſulphur and nitre were well purified, that the coal was good, and that the three ingredients were thoroughly incorporated together; but if the other heaps alſo take fire at the ſame time, it is preſumed, that either common ſalt was mixed with the nitre, or that the coal was not well ground, or the whole maſs not well beat and mixed together; and if either the nitre or ſulphur be not well purified, the paper will be black or ſpotted.

Several inſtruments have been invented to try the ſtrength of gunpowder; but they have generally been complained of as inaccurate. Mr Thomſon, in the 71ſt volume of the Philoſophical Tranſactions, gives an account of an exact method of proving the ſtrength of it. “As the force of powder (ſays he) ariſes from the action of an elaſtic fluid that is generated from it in its inflammation, the quicker the charge takes fire, the more of this fluid will be generated in any given ſhort ſpace of time, and the greater of courſe will its effect be upon the bullet. But in the common method of proving gunpowder, the weight by which the powder is confined is ſo great in proportion to the quantity of the charge, that there is time quite ſufficient for the charge to be all inflamed, even when the powder is of the ſloweſt compoſition, before the body to be put in motion can be ſenſibly removed from its place. The experiment therefore may ſhow which of the two kinds of powder is the ſtrongeſt, when equal quantities of both are confined in equal ſpaces, and both completely inflamed; but the degree of the inflammability, which is a property eſſential to the goodneſs of the powder, cannot by this means be aſcertained. Hence it appears how powder may anſwer to the proof, ſuch as is commonly required, and may nevertheleſs turn out very indifferent when it comes to be uſed in ſervice. But though the common powder-triers may ſhow powder to be better than it really is, they can never make it appear to be worſe than it is; it will therefore always be the intereſt of thoſe who manufacture the commodity to adhere to the old method of proof, but the purchaſer will find his account in having it examined in a method by which its goodneſs may be aſcertained with greater preciſion.”

In order to determine the goodneſs of powder by Mr Thomſon's method, it is neceſſary to have a barrel ſuſpended by two iron rods in ſuch a manner that it can eaſily move backward or forward by the vibration of the rods; and the ſpace it moves through aſcertained by marking it on a piece of ribbon. The barrel being then charged with powder, and fitted with a proper bullet, is to be fired, and the recoil marked upon the ribbon. The experiment is to be repeated three or four times, or oftener if there is any difference in the recoil; the extremes of which may be marked with black lines on the ribbon, and the word *proof* written upon the middle line betwixt the two. But if the experiments are made with ſufficient accuracy, there will commonly be very little difference in the length to which the ribbon is drawn out. Thus the comparative goodneſs of powder may eaſily be aſcertained; for the ſtronger the powder is, the greater will be the recoil, and conſequently the greater length to which the ribbon will be drawn out; and if care is taken in proportioning the charge to the weight of the bullet, to come as near as poſſible to the medium proportion that obtains in practice, the determination of the goodneſs of gunpowder from the reſult of this experiment cannot fail to hold good in actual ſervice. The bullets ſhould be made to fit the bore with very little windage; and it would be better if they were all caſt in one mould and in the ſame parcel of lead; as in that caſe their weights and dimenſions would be more accurately the ſame; and the experiments would of courſe be more concluſive. The ſtated charge of powder might be half an ounce, and it ſhould always be put in a cartridge; and after the piece is loaded, it ſhould be primed with other powder, firſt taking care to prick the cartridge by thruſting a priming wire down the vent.

From ſeveral experiments it appears, that the effect of the charge is conſiderably augmented or diminiſhed, according to the greater or leſs force employed in ramming it down. To prevent this inconvenience, Mr Thomſon adviſes the uſe of a cylindric ramrod of wood, fitted with a metal ring about an inch or an inch and an half in diameter; which being placed at a proper diſtance from the end which goes up into the bore, will prevent the powder from being too much compreſſed. In making experiments of this kind, however, it is neceſſary to pay attention to the heat of the barrel as well as to the temperature of the atmoſphere; for heat and cold, dryneſs and moiſture, have a very ſenſible effect upon gunpowder to augment or diminiſh its force. When a very great degree of accuracy therefore happens to be requiſite, it will be proper to begin by firing the piece two or three times, merely to warm it; after which three or four experiments may be made with ſtandard powder, to determine the proof: mark a ſecond time, for the ſtrength of powder is different at different times, in conſequence of the ſtate of the atmoſphere. After this the experiments may be made with the powder that is to be proved, taking care to preſerve the ſame interval of time between the diſcharges, that the heat of the piece may be the ſame in each trial.

Having thus determined the comparative degrees of ſtrength of two different kinds of powder, their comparative value may be aſcertained by augmenting the quantity of the weaker powder till the velocity of the bullets

Gunpowder.

bullets in both caſes becomes the ſame. The ſtrong powder is therefore preciſely as much more valuable than the weak, as it produces the ſame effect with a ſmaller quantity. Thus if a quarter of an ounce of one kind of powder diſcharges a bullet with the ſame velocity that half an ounce of another kind does, it is plain that the former is twice as valuable as the latter, and ought to be ſold at double the price.—By compariſons of this kind, Mr Thompſon found that the beſt battle powder (ſo called from its being made at the village of *Battle* in Kent) is ſtronger than government powder, in the proportion of 4 to 3; but from a compariſon of the prices, it appears that the former is no leſs than 41$\frac{2}{3}$ *per cent*, dearer than it ought to be; and conſequently, that whoever uſes it in preference to government powder, does it at a certain loſs of 41$\frac{2}{3}$ *per cent*. of the money it coſts him.

There has been much talk of a white powder, which, if it anſwered the character given it, might be a dangerous compoſition; for they pretend that this white powder will throw a ball as far as the black, yet without making a report; but none of the white powder we have ſeen, ſays Dr Shaw, anſwers to this character: being, as we apprehend, commonly made either with touchwood or camphor, inſtead of coal.

Under the article GUNNERY, the phyſical cauſe of the exploſion of powder, and the force wherewith it expands, have been ſo fully conſidered, that it would be ſuperfluous to add any thing here concerning them. Only we may obſerve, that though it is commonly made uſe of for military purpoſes only in ſmall quantities, and confined in certain veſſels; yet when large quantities are fired at once, even when unconfined in the open air, it is capable of producing terrible deſtruction. The accounts of damage done by the blowing up of magazines, powder-mills, &c. are too numerous and well-known to be here taken notice of. The following is a relation of what even a moderate quantity of powder will accompliſh, when fired in the open air. "The king of Navarre took Monſegur. Captain Milon incloſed 500 pounds of powder in a bag, which he found means to introduce, by a drain from the town, into the ditch between two principal gates: the end of the leader was hid in the graſs. Every thing being ready to play off this machine, the king gave us leave to go and ſee its effects; which were ſurpriſing. For one of the gates was thrown into the middle of the town, and the other into the field fifty paces from the wall; all the vaults were deſtroyed, and a paſſage was made in the wall for three men to enter abreaſt, by which the town was taken."—For further accounts of the force of large quantities of powder, ſee the article MINES.

From this and other accounts of the dreadful effects of gunpowder, when fired in a large quantity in the open air, it would ſeem, that great as its power is in cloſe veſſels, it is ſtill greater when the air has acceſs to it; for from the quantity of powder requiſite to charge great guns, it is by no means probable that double the quantity of powder confined in fire-arms of any ſize or capacity, and diſcharged all at once againſt the walls, would have produced ſuch effects; eſpecially when we conſider that the power muſt have been equally great at an equal diſtance all round; ſo that had there been other walls and gates behind this quantity of powder as well as before it, they would in all probability have been thrown down alſo. This conjecture ſeems to be ſomewhat confirmed by the great diminution of the force of pulvis fulminans and aurum fulminans when confined in cloſe veſſels. Mr Thomſon mentions likewiſe a very ſingular fact relative to gunpowder which ſeems to be ſomewhat analogous to that juſt mentioned; and which indeed ſeems to explain it: namely, that the heat communicated by gunpowder when ſlightly confined, is much greater than when otherwiſe. "I was much ſurpriſed (ſays he), upon taking hold of the barrel immediately after an experiment when it was fired with 330 grains of powder without any bullet, to find it ſo very hot that I could ſcarce bear it in my hand, evidently much hotter than I had ever found it before, notwithſtanding the ſame charge of powder had been made uſe of in the two preceding experiments; and in both theſe experiments the piece was loaded with a bullet, which one would naturally imagine, by confining the flame, and prolonging the time of its action, would heat the barrel much more than when it was fired with powder alone. I was convinced that I could not be miſtaken in the fact: for it had been my conſtant practice to take hold of the piece to wipe it out as ſoon as an experiment was finiſhed, and I never before had found any inconvenience from the heat in holding it. But in order to put the matter beyond all doubt after letting the barrel cool down to the proper temperature, I repeated the experiment twice with the ſame charge of powder and a bullet; and in both theſe trials the heat of the piece was evidently much leſs than what it was in the experiment abovementioned. Being much ſtruck with this accidental diſcovery of the great degree of heat that pieces acquire when they are fired with powder, without any bullet, and being deſirous of finding out whether it is a circumſtance that obtains univerſally, I was very attentive to the heat of the barrel after each of the ſucceeding expeiments; and I conſtantly found the heat ſenſibly greater when the piece was fired with powder only, than when the ſame charge was made to impel one or more bullets."

To account for this, our author ſuppoſes that very little of the heat acquired in firing a piece of ordnance comes from the powder; for the time that it continues in the piece, perhaps not exceeding the 200th part of a ſecond, is ſo ſmall, that were the flame *four hundred* times, inſtead of *four* times, as Mr Robins ſuppoſes, hotter than red hot iron, it is by far too ſhort to communicate a ſenſible degree of heat to one of our large pieces of cannon. Beſides, if the heat of the flame was ſufficient to communicate ſuch a degree of heat to the gun, it muſt undoubtedly be capable of burning up all combuſtible bodies that come in its way, and of melting lead ſhot when ſuch were uſed: but inſtead of this, we frequently ſee the fineſt paper diſcharged from the mouth of a gun without being inflamed, after it has ſuſtained the action of the fire through the whole length of the bore; and the ſmalleſt lead-ſhot is diſcharged whithout being melted. The objection drawn from the heat of bullets taken up immediately after being diſcharged from fire-arms does not hold; for bullets diſcharged from air-guns and even croſs-bows are likewiſe found hot, eſpecially when they happen to ſtrike any hard body, and are much flattened. If a muſket ball be diſcharged into water, or againſt any very ſoft body, it will not be ſenſibly heated; but if it hits a plate of iron or any other body which it cannot penetrate, it will be broken in pieces by the blow, and the diſperſed parts will be found in a ſtate little ſhort of actual fuſion. Hence our author concludes, that bullets are not heated by the flame but by percuſſion. Another objection is, that the vents of braſs guns are frequently enlarged to ſuch a degree by repeatedly firing them, that the piece becomes uſeleſs. But this proves only that braſs is eaſily corroded by the flame of the gunpowder; which indeed is the caſe with iron alſo. We cannot ſuppoſe that in either caſe any real ſolution takes place: on the contrary, it is very evident that it does not; for when the vents of fire arms are lined with gold, they will remain without enlargement for any length of time, though it is well known that gold is much more eaſily melted than iron. As the heat communicated to bullets, therefore is not to be aſcribed to the flame but to percuſſion, ſo the heat acquired by guns is to be attributed, in our author's opinion, to the motion and friction of the internal parts of the metal among themſelves by the violent action of the flame upon the inſide of the bore. To generate heat, the action of the powder muſt be not only ſufficient to ſtrain the metal, and produce a motion in its parts, but this effect muſt be extremely rapid; and the effect will be much augmented if the exertion of the force and the duration of its action are momentaneous; for in this caſe the fibres of the metal that are violently ſtretched will return with their full force and velocity, and the ſwift vibratory motion and attrition abovementioned will be produced. Now the effort of any given charge of powder upon the gun is very nearly the ſame whether it be fired with a bullet or without; but the velocity with which the generated elaſtic fluid makes its eſcape, is much greater when the powder is fired alone than when it is made to impel one or more bullets; the heat ought therefore to be much greater in the former than in the latter caſe as has been found by experiment. "But to make this matter ſtill plainer, (ſays our author), we will ſuppoſe any given quantity of powder to be confined in a ſpace that is juſt capable of containing it, and that in this ſituation it is ſet on fire. Let us ſuppoſe this ſpace to be the chamber of a piece of ordnance, and that a bullet or any other ſolid body is ſo firmly fixed in the bore, immediately upon the charge that the whole effort of the powder ſhall not be able to remove it as the powder goes on to be inflamed, and the elaſtic fluid to be generated, the preſſure upon the inſide of the chamber will be increaſed, till at length all the powder being burnt, the ſtrain upon the metal will be at its greateſt height, and in this ſituation things will remain; the coheſion or elaſticity of the particles of metal counterbalancing the preſſure of the fluid.—Under theſe circumſtances very little heat would be generated; for the continued effort of the elaſtic fluid would approach to the nature of the preſſure of a weight: and that concuſſion, vibration, and friction among the particles of the metal, which in the colliſion of elaſtic bodies is the cauſe of the heat produced, would ſcarcely take effect. But inſtead of being firmly fixed in its place, let the bullet now be moveable, but let it give way with great difficulty and by ſlow degrees. In this caſe the elaſtic fluid will be generated as before, and will exert its whole force upon the chamber of the piece; but as the bullet gives way to the preſſure, and moves on in the bore, the fluid will expand itſelf and grow weaker, the particles of the metal will gradually return to their former ſituations; but the velocity with which the metal reſtores itſelf being but ſmall, the vibration that remains in the metal after the elaſtic fluid has made its eſcape will be very languid, as will the heat be which is generated by it. But if inſtead of giving way with ſo much difficulty, the bullet is made lighter, ſo as to afford but little reſiſtance to the elaſtic fluid in making its eſcape, or if it is fired without any bullet a tall; then, there being little or nothing to oppoſe the paſſage of the flame through the bore, it will expand itſelf with an amazing velocity, and its action upon the gun will ceaſe almoſt in an inſtant; the ſtrained metal will reſtore itſelf with a very rapid motion, and a ſharp vibration will enſue, by which the piece will be much heated."

This reaſoning of Mr Thomſon's, however, ſeems not to be very well founded. In the firſt place, we are by no means certain that heat is produced by the motion or vibration of the particles of a ſolid body among each other. On the contrary, even in the hotteſt bodies we cannot be made ſenſible of vibration exiſting among their particles, while certain ſounds will cauſe the moſt ſolid ſubſtances vibrate perceptibly, and yet without producing any heat.—From this as well as innumerable other experiments, it is probable, that heat conſiſts in the emiſſion of a certain ſubtile fluid from the heated body, which is every moment replaced from the atmoſphere, or from ſome other ſource. Hence the more air that has acceſs to any burning body, the hotter it will become, and the more will any other that is in its vicinity be heated. This is evident from the contrivance of Argand's lamp, which is neither more nor leſs than the admiſſion of a larger quantity of air to the ſame quantity of flame. The caſe is the ſame with the firing of gunpowder, when a bullet is put into the piece, the acceſs of the air is much more effectually prevented than when only a ſimple wadding is made uſe of. In conſequence of this, no ſooner is the powder fired without a bullet, than the external air ruſhes down the bore, mingles with the flame, and vehemently augments the heat, as well as the abſolute force of the exploſion. It is true, that without the external air, the nitre in the gunpowder itſelf produces as much air as to inflame it very violently; but this does not prove that it coud not be inflamed ſtill more by the admiſſion of more air. Beſides, when the external air is thus admitted, the flame itſelf is agitated by its admiſſion, and driven againſt the ſides of the piece with a force ſuperior to what it has by the mere expanſive preſſure; whence the heat muſt alſo be conſiderably augmented, in the ſame manner that the heat of any other body will be by the having flame blown againſt it inſtead of being blown away from it, or ſuffered to burn quietly by its ſide. Thus, without any recourſe to an unknown and conjectural vibration among the particles of a ſolid metal, we may account for the augmented head of a piece charged only with powder, and likewiſe in ſome meaſure for the prodigious

gious force of gunpowder, aurum fulminans, and pulvis fulminans, when fired in the open air, compared with what they have when exploded in cloſe veſſels.—The force of gunpowder is manifeſtly augmented in cloſe veſſels, as has been already ſaid, by being rammed down or compreſſed together: but this ariſes from another cauſe, namely, that a greater quantity of flame is compreſſed into the ſame ſpace than when the powder is not rammed; and this compreſſion of the flame is in proportion to the compreſſion of the powder in the chamber of the piece. But in this caſe the flame is probably leſs powerful than in the former, though the *quantity* incloſed in a ſmall ſpace may probably make up for the quality. Mr Thomſon's experiments on the increaſed force of gunpowder by compreſſion are as follow:—Having put a charge of 218 grains of powder, incloſed in a cartridge of very fine paper, gently into the bore of the piece, the velocity of the bullets, at a mean of four experiments, was at the rate of 1225 feet in a ſecond; but in a medium of three experiments, when the ſame quantity of powder was rammed down by five or ſix ſtrokes of the ramrod, the velocity was 1329 feet in a ſecond. "Now (ſays he) the total force or preſſure exerted by the charge upon the bullet, is as the ſquare of its velocity; and 1329^2 is to 1225^2 as 1,776 is to 1; or nearly as 6 is to 5: and in that proportion was the force of the given charge of powder increaſed by being rammed.—When, inſtead of ramming the powder, or preſſing it gently together in the bore, it is put into a ſpace larger than it is capable of filling, the force of the charge is thereby very ſenſibly leſſened, as Mr Robins and others have found by repeated trials. In my 30th experiment, the charge, conſiſting of no more than 165 grains of powder, was made to occupy 3.2 inches of the bore, inſtead of 1.45 inches, which ſpace it juſt filled. When it was gently puſhed into its place without being rammed, the conſequence was, that the velocity of the bullet, inſtead of being 1100 feet or upwards in a ſecond, was only at the rate of 914 feet, and the recoil was leſſened in proportion.—Hence we may draw this practical inference, that the powder with which a piece of ordnance or a fire-arm is charged, ought always to be preſſed together in the bore; and if it is rammed to a certain degree, the velocity of the bullet will be ſtill farther increaſed. It is well known that the recoil of a muſket is greater when its charge is rammed than when it is not; and there cannot be a ſtronger proof that ramming increaſes the force of powder."

To recover damaged GUNPOWDER. The method of the powder-merchants is, to put part of the powder on a ſail cloth, to which they add an equal weight of what is really good; and with a ſhovel mingle it well together, dry it in the ſun, and barrel it up, keeping it in a dry and proper place. Others again, if it be very bad, reſtore it by moiſtening it with vinegar, water, urine, or brandy: then they beat it fine, ſearce it, and to every pound of powder add an ounce, an ounce and a half, or two ounces, according as it is decayed, of melted ſalt-petre. Afterwards, theſe ingredients are to be moiſtened and mixed well, ſo that nothing can be diſcerned in the compoſition, which may be known by cutting the maſs; and then they granulate it as aforeſaid. In caſe the powder be in a manner quite ſpoiled, the only way is to extract the ſaltpetre with water according to the uſual manner, by boiling, filtrating, evaporating, and cryſtallizing; and then with freſh ſulphur and charcoal to make it up anew again.

In regard to the medical virtues of gunpowder, Boerhaave informs us, that the flame of it affords a very healthy fume in the height of the plague, becauſe the exploſive acid vapour of nitre and ſulphur corrects the air; and that the ſame vapour, if received in a ſmall cloſe pent-up place, kills inſects.

It is enacted by 5 and 11 of Geo. I. and 5 Geo. II. *c.* 20. that gunpowder be carried to any place in a covered carriage; the barrels being cloſe-jointed; or in caſes and bags of leather, &c. And perſons keeping more than 200 pounds weight of gunpowder at one time, within the cities of London and Weſtminſter, or the ſuburbs, &c. are liable to forfeitures if it be not removed; and juſtices of peace may iſſue warrants to ſearch for, ſeize, and remove the ſame.

GUN-Shot Wounds. See SURGERY.

GUN-Smith, a maker of ſmall fire-arms, as muſkets, fowling-pieces, piſtols, &c.

GUN-Smithery, the buſineſs of a gun-ſmith, or the art of making fire-arms of the ſmaller ſort, as muſkets, fowling-pieces, piſtols, &c.

The principal part of theſe inſtruments is the barrel, which ought to have the following properties. 1. Lightneſs, that it may incommode the perſon who carries it as little as poſſible. 2. Sufficient ſtrength and other properties requiſite to prevent its burſting by a diſcharge. 3. It ought to be conſtructed in ſuch a manner as not to recoil with violence. And, 4. It ought to be of ſufficient length to carry the ſhot to as great a diſtance as the force of the powder employed is capable of doing.

The manufacture of fire-arms is now carried to ſuch a degree of perfection by different European nations, that it may perhaps be juſtly doubted whether any farther improvement in the requiſites juſt mentioned can be made. For the materials, the ſofteſt iron that can be procured is to be made uſe of. The beſt in Britain are formed of *ſtubs* as they are called, or old horſe-ſhoe nails; which are procured by the gunſmiths from farriers, and from poor people who ſubſiſt by picking them up on the great roads leading to London. Theſe are ſold at about 10 s. per cwt. and 28 pounds are requiſite to form a ſingle muſket barrel. The method of manufacturing them from this material is as follows: A hoop of about an inch broad, and ſix or ſeven inches diameter, is placed in a perpendicular ſituation, and the ſtubs, previouſly well cleaned, piled up in it with their heads outermoſt on each ſide, till the hoop is quite filled and wedged tight with them. The whole then reſembles a rough circular cake of iron; which being heated to a white heat, and then ſtrongly hammered, coaleſces into one ſolid lump. The hoop is now removed, and the heatings and hammerings repeated till the iron is rendered very tough and cloſe in the grain; when it is drawn out into pieces of about 24 inches in length, half an inch or more in breadth, and an half an inch in thickneſs.

Four of theſe pieces are employed for one barrel; but in the ordinary way a ſingle bar of the beſt ſoft iron is employed. The workmen begin with hammering out this into the form of a flat ruler having its length and breadth proportioned to the dimenſions of the intended barrel. By repeated heating and hammering this plate is turned round a tempered iron rod called a *mandril*, the diameter of which is conſiderably ſmaller than the intended bore of the barrel. One of the edges of the plate being laid over the other about half an inch, the whole is heated and welded by two or three inches at a time, hammering it briſkly, but with moderate ſtrokes, upon an anvil which has a number of ſemicircular furrows in it, adapted to barrels of different ſizes. Every time the barrel is withdrawn from the fire, the workman ſtrikes it gently againſt the anvil once or twice in an horizontal direction. By this operation the particles of the metal are more perfectly conſolidated, and every appearance of a ſeam in the barrel is obliterated. The mandril being then again introduced into the cavity of the barrel, the latter is very ſtrongly hammered upon it in one of the ſemicircular hollows of the anvil, by ſmall portions at a time; the heatings and hammerings being repeated until the whole barrel has undergone the operation, and its parts rendered as perfectly continuous as if they had been formed out of a ſolid piece. To effect this completely, three welding heats are neceſſary when the very beſt iron is made uſe of, and a greater number for the coarſer kinds. The French workmen imagine, that by giving the barrel, while in the fire, ſlight horizontal ſtrokes with the hammer, ſo as to communicate a vibratory motion to the iron, thoſe particles are thrown off which are in a ſtate of fuſion and cannot eaſily be converted into malleable iron: but conſidering the great number of operations already deſcribed which the metal has undergone, we can ſcarce ſuppoſe this to be of much conſequence.

The next operation in forming the barrels is the boring of them, which is done in the following manner: Two beams of oak, each about ſix inches in diameter, and ſix or ſeven feet long, are placed horizontally and parallel to one another; having each of their extremities mortiſed upon a ſtrong upright piece about three feet high, and firmly fixed. A ſpace of three or four inches is left between the horizontal pieces, in which a piece of wood is made to ſlide by having at either end a tenon let into a groove which runs on the inſide of each beam throughout its whole length. Through this ſliding piece a ſtrong pin or bolt of iron is driven or ſcrewed in a perpendicular direction, having at its upper end a round hole large enough to admit the breech of the barrel, which is ſecured in it by means of a piece of iron that ſerves as a wedge, and a vertical ſcrew paſſing through the upper part of the hole. A chain is faſtened to a ſtaple in one ſide of the ſliding piece which runs between the two horizontal beams; and paſſing over a pully at one end of the machine, has a weight hooked on to it. An upright piece of timber is fixed above this pully and between the ends of the beams, having its upper end perforated by the axis of an iron crank furniſhed with a ſquare ſocket; the other axis being ſupported by the wall, or by a ſtrong poſt, and loaded with a heavy wheel of caſt iron to give it force. The axes of this crank are in a line with the hole in the bolt already mentioned.—The borer being then fixed into the ſocket of the crank, has its other end, previouſly well oiled, introduced into the barrel, whoſe breech part is made faſt in the hole of the bolt: the chain is then carried over the pully, and the weight hooked on: the crank being then turned with the hand, the barrel advances as the borer cuts its way, till it has paſſed through the whole length.—The boring bit conſiſts of an iron rod ſomewhat longer than the barrel, one end of which fits the ſocket of the crank; the other is adapted to a cylindrical piece of tempered ſteel about an inch and a half in length, having its ſurface cut after the manner of a perpetual ſcrew, with five or ſix threads, the obliquity of which is very ſmall. The breadth of the furrows is the ſame with that of the threads, and their depth ſufficient to let the metal cut by the threads paſs through them eaſily. Thus the bit gets a very ſtrong hold of the metal; and the threads, being ſharp at the edges, ſcoop out and remove all the inequalities and roughneſs from the inſide of the barrel, and render the cavity ſmooth and equal throughout. A number of bits, each a little larger than the former, are afterwards ſucceſſively paſſed through the barrel in the ſame way, until the bore has acquired the magnitude intended. By this operation the barrel is very much heated, eſpecially the firſt time the borer is paſſed through it, by which means it is apt to warp. To prevent this in ſome meaſure, the barrel is covered with a cloth kept conſtantly wetted, which not only preſerves the barrel from an exceſs of heat, but likewiſe preſerves the temper of the bit from being deſtroyed. The borer itſelf muſt alſo be withdrawn from time to time; both to clean it from the ſhavings of the metal and to oil it, or repair any damages it may have ſuſtained. Every time a freſh bit has been paſſed through the barrel, the latter muſt be carefully examined, to ſee if it has warped; and likewiſe if there are any ſpots, by the workmen called *blacks*, on its inſide. When warped, it muſt be ſtraightened on the anvil; for which a few ſlight ſtrokes on the convex parts will be ſufficient; and this is termed *ſetting up* the barrel. When black ſpots are perceived the correſponding part on the outſide muſt be marked, and driven in by gentle ſtrokes with the hammer, when they will be completely removed by paſſing the borer another time through the piece.

The equality of the bore is of the utmoſt conſequence to the perfection of a barrel; inſomuch that the greateſt poſſible accuracy in every other reſpect will not make amends for any deficiency in this reſpect. The method uſed by gunſmiths to aſcertain this is by a cylindrical plug of tempered ſteel highly poliſhed, about an inch in length, and fitting the bore exactly. This is ſcrewed upon the end of an iron rod, and introduced into the cavity of the barrel, where it is moved backwards and forwards; and the places where it paſſes with difficulty being marked, the boring bit is repeatedly paſſed until it moves with equal eaſe through every part. Any perſon who wiſhes to know the merit of his piece in this reſpect, may do it with tolerable accuracy by means of a plug of lead caſt on a rod of iron; or even by a muſket ball filed exactly to the bore, and puſhed through the barrel by a ramrod; taking care, however, not to uſe much force leſt the ball be flattened, and its paſſage thus rendered difficult.

The laſt ſtep towards the perfection of the inſide of the barrel is termed *fine boring*; by which is meant the ſmoothing it in ſuch a manner as to remove all marks and inequalities left by the borer. The fine borer reſembles

ſembles the other in its general conſtruction: but inſtead of the piece of ſteel cut in form of a ſcrew which belongs to that, it is furniſhed with a ſquare broach 10 or 12 inches long, highly poliſhed, and very ſharp, by which means it cuts the metal very ſmoothly. It is found to anſwer the purpoſe beſt when only two of its edges are allowed to work, the other two are covered with ſlips of oiled paper, one or more additional ſlips being put on each time that the inſtrument is paſſed through the barrel. The fine-borer is frequently paſſed through from the muzzle to the breech, and from the breech to the muzzle, until the whole inſide preſents a perfectly equal and poliſhed ſurface; the barrel being likewiſe examined and ſet up, if requiſite, after each time. It is abſolutely neceſſary that this inſtrument ſhould be perfectly true, and not in the leaſt caſt or warped in the tempering.

Beſides the operations above deſcribed, another, called *poliſhing*, is uſually performed in gun-barrels, though it is doubtful whether this laſt be attended with any good effect or not. It is performed by a cylinder of lead, five or ſix inches long, caſt upon a rod of iron, and filed exactly to the bore. The lead being then covered with very fine emery and oil, is wrought backwards and forwards through the whole length of the barrel until the inſide has acquired the requiſite degree of poliſh. The diſadvantages of this operation are that it is ſcarce poſſible to perform it without preſſing more upon one part than another, and thus producing ſome degree of inequality on the inſide, which is of the very worſt conſequence to fire-arms. The poliſh thus given is likewiſe very periſhable; ſo that the fine-boring may juſtly be conſidered as the laſt operation neceſſary for the inſide of a barrel; and it is then proper to give the external form and proportions by means of a file. For this purpoſe, four faces are firſt formed upon it, then eight, then 16; and ſo on till it be quite round, excepting the part next the breech, called the *reinforced part*, which is always left of an octagonal form. It being abſolutely neceſſary that the barrel ſhould be equally thick on every ſide, gunſmiths employ, for accompliſhing this purpoſe, a particular tool named a *compaſs*. This conſiſts of an iron rod bent in ſuch a manner as to form two parallel branches about an inch diſtant from one another. One of theſe branches is introduced into the barrel, and kept cloſely applied to the ſide, by means of one or more ſprings with which it is furniſhed: the other deſcends parallel to this on the outſide, and has ſeveral ſcrews paſſing through it with their points directed to the barrel. By ſcrewing theſe until their points touch the ſurface of the barrel, and then turning the inſtrument round within the bore, we perceive where the metal is too thick, and how much it muſt be reduced, in order to render every part perfectly equal throught its circumference. It may be made long enough to reach the whole length of the barrel, though it will be more convenient to have it only half as much, and to introduce it firſt at one end and then at the other. Inſtead of rounding the barrel by means of a file and compaſs, however, ſome people do ſo by turning it in a lathe; which is no doubt more expeditious, though neither ſo certain nor exact. A ſpindle as long as a gun barrel cannot without great difficulty, be prevented from ſpringing conſiderably under the tool employed to reduce or ſmooth it in turning; whence it is found, that by this operation barrels are more frequently warped than by all the borings they undergo; and there is now this farther inconconvenience, that they cannot be ſet up as formerly, without danger of deſtroying them entirely.

The barrels being thus bored and formed externally, it is cuſtomary for the gunſmiths in France to ſolder on the loops and aim before they breech the barrel. The Engliſh, however, do not reſtrict themſelves in this manner: for as ſoft ſolder is ſufficient for faſtening on theſe, they never uſe any other; while the French, who uſe hard ſolder, muſt of conſequence employ a great heat. Thus the inſide is roughened ſometimes ſo conſiderably, that it is neceſſary to repeat the fine boring: which could not be done without injuring the threads of the ſcrew formed for the breech, if the barrel were prepared for the latter without ſoldering on the former.

The firſt tool employed in forming the breech-ſcrew is a plug of tempered ſteel, ſomewhat conical, with the threads of a male ſcrew upon its ſurface, and by the workmen termed a *ſcrew tap*. This being introduced into the barrel, and worked from left to right and back again, until it has marked out the four firſt threads of the ſcrew, another leſs conical tap is introduced; and when this has carried the impreſſion of the ſcrew as far as it is intended to go, a third one, nearly cylindrical, is made uſe of, ſcarcely differing from the plug of the breech intended to fill the ſcrew thus formed in the barrel. The plug itſelf has its ſcrew formed by means of a ſcrew-plate of tempered-ſteel, with ſeveral female ſcrews, correſponding with the taps employed for forming that in the barrel. Seven or eight threads are a ſufficient length for a plug; they ought to be neat and ſharp, ſo as completely to fill the turns made in the barrel by the tap. The breech-plug is then to be caſe-hardened, or to have its ſurface converted into ſteel, by covering it with ſhavings of horn, or the parings of the hoofs of horſes, and keeping it for ſome time red hot; after which it is plunged in cold water.

The only thing now requiſite for completing the barrels is to give them a proper colour; as a preparation for which their outſide is firſt to be neatly poliſhed with oil and emery. This being done, it was formerly the cuſtom to give ſuch a degree of heat as would make them blue throughout; but as this cannot be effected without a partial calcination of the ſurface, which of conſequence affects the inſide alſo, the blue colour has been for ſome time diſuſed, and a brown one ſubſtituted in its place. To give this colour, the pieces are firſt rubbed over with aquafortis or ſpirit of ſalt diluted with water; after which they are laid by till a complete coat of ruſt is formed upon them: a little oil is then applied; and the ſurface being rubbed dry, is poliſhed by means of a hard bruſh and bees-wax.

Thus the common muſket-barrels for the purpoſes eſpecially of ſportmanſhip are made; but there are ſome other methods of manufacture, by which the barrels are made to differ in ſome reſpects from thoſe juſt deſcribed, and are thought to be conſiderably improved. One kind of theſe are called *twiſted* barrels; and by the Engliſh workmen are formed out of the plates made of *ſtubs* formerly deſcribed. Four of theſe, of the ſize already mentioned, are requiſite to make one barrel. One of then heated red hot for five or ſix inches is turned like a cork-ſcrew by means of the hammer and anvil; the remaining parts being treated ſucceſſively in the ſame manner until the whole is turned into a ſpiral, forming a tube the diameter of which correſponds with the bore of the intended barrel. Four are generally ſufficient to form a barrel of the ordinary length, *i. e.* from 32 to 38 inches; and the two which form the breech or ſtrongeſt part, called the *reinforced part*, are conſiderably thicker than thoſe which form the muzzle or fore part of the barrel. One of theſe tubes is then welded to a part of an old barrel to ſerve as an handle; after which the turns of the ſpiral are united by heating the tube two or three inches at a time to a bright white heat, and ſtriking the end of it ſeveral times againſt the anvil in a horizontal direction with conſiderable ſtrength, which is called *jumping the barrel*; and the heats given for this purpoſe are called *jumping heats*. The next ſtep is to introduce a mandril into the cavity, and to hammer the heated portion lightly in order to flatten the ridges or burrs raiſed by the jumping at the place where the ſpirals are joined. As ſoon as one piece is jumped throughout its whole length, another is welded to it, and treated in the ſame manner, until the four pieces are united, when the part of the old barrel is cut off, as being no longer of any uſe. The welding is repeated three times at leaſt, and is performed exactly in the ſame manner as directed for plain barrels; and the piece may afterwards be finiſhed according to the directions already given.

The operation for the French twiſted barrels is very different from that juſt mentioned, and much more exceptionable. It conſiſts in heating the barrel by a few inches at a time to a ſtrong red heat; one end is then ſcrewed into a vice, and a ſquare piece of iron with an handle like an augre is introduced into the other. By means of theſe the fibres of the heated portion are twiſted into a ſpiral direction, which is ſuppoſed to reſiſt the effort of the inflamed powder better than the other. To render this operation complete, however, it muſt be obſerved, that when once the ſeveral portions of the barrel have been twiſted, the ſubſequent heats ought not to be very great, or the grain of the metal will regain its former ſtate, and the barrel be no better for the twiſting than before. To twiſt a barrel in this manner, alſo, it will be neceſſary to forge it at leaſt half a foot longer than it is intended to be, that a ſufficient length may be kept cold at each end to give a ſufficient purchaſe to the vice and twiſting inſtrument; and theſe portions muſt afterwards be cut off before the barrel is bored, or two pieces of an old barrel may be welded to the muzzle and breech of that which is to be twiſted, and cut off when the operation is over. Theſe pieces may alſo be made ſtronger than uſual to reſiſt the force of the vice and twiſting inſtrument; and in order to give the latter a firmer hold, the cavity of the muzzle may be made of a ſquare form. The Engliſh workmen are unanimouſly of opinion that this method of twiſting is really injurious to the barrel, by ſtraining the fibres of the metal. At any rate, from the injudicious methods followed by the French artiſts, the greateſt part of their barrels, ſaid to be twiſted, are not ſo in reality; there being at leaſt ſix or ſeven inches at the muzzle, and ſeven or eight at the breech, which are not affected by the operation.

The French *ribbon barrels* have a great reſemblance to the Engliſh twiſted ones; but the proceſs for making them is much more operoſe, though it ſeems not to poſſeſs any real advantage over that uſed by the Engliſh artiſts. A plate of iron, about the twelfth part of an inch in thickneſs, is turned round a mandril, and welded its whole length in the ſame manner as a plain barrel. Upon this ſlight barrel, which is called the *lining*, a plate of iron about an inch in breadth, and bevelled off at the edges, is by means of ſucceſſive heats rolled in a ſpiral direction; after which it is termed the *ribbon*, and muſt have a thickneſs correſponding with that part of the barrel which it is to form. As it would, however, be difficult to form a ribbon of ſufficient length for the whole barrel, it is made in ſeveral pieces; and when one piece is rolled on, another is welded to its end, and the operation continued until the lining be entirely covered. The edges are ſo much bevelled, that the one folds over the other about a quarter of an inch. After the ribbon is all rolled on, the barrel muſt be heated by two or three inches at a time, and the turns of the ſpiral united to each other and to the lining by being welded in the ſame manner as the twiſted barrel; though, from what has been ſaid of the conſtruction of theſe barrels, it is plain that the operation of *jumping* cannot be admitted in them. The barrel is afterwards bored in ſuch a manner that almoſt the whole of the lining is cut out, and ſcarce any thing left but the ribbon with which the lining was covered.

The ſuperiority of twiſted and ribbon barrels over the plain kind gave occaſion to a third ſort named *wired barrels*. Theſe were invented by an ingenious workman at Paris named *Barrois*; whoſe method was as follows: Upon a thin barrel, filed and dreſſed as uſual, he rolled, as cloſe as poſſible, and in a ſpiral direction, a tempered iron wire about the thickneſs of a crow-quil, the firſt layer covering only the reinforced part. The turns of the wire were ſoldered to each other and to the barrel with a compoſition which he kept a ſecret. The wired part was then filed ſmooth and bright, but not ſo much as to weaken it; a ſecond layer of wire was applied over the firſt, extending two-thirds of the length of the barrel; and this being ſmoothed and brightened like the firſt, a third layer was applied, which covered the two former and reached quite to the muzzle.

The barrels made after this manner are ſuppoſed to be much ſuperior to others, though the ſuppoſition ſeems not to be well founded. It is certain that wire is not preferable to other iron as a material for gun-barrels; and the ſolder uſed by M. Barrois in a quantity nearly equal to the wire itſelf, muſt be accounted a defect as far as it was uſed; for no metal has yet been found equal to iron for the purpoſes of gunſmiths: ſo that by the uſe of ſo much of this ſolder in the compoſition of the barrel, it muſt be undoubtedly weaker than if it had been all made of iron. We are not to ſuppoſe the wire abſolutely free from flaws; and even though it were, there will always be ſmall cavities between its turns, which the ſolder cannot fill completely. Beſides, as the operation of wiring was performed by M. Barrois upon a barrel that had been previouſly bored and dreſſed within, the repeated heats to which it was afterwards ſubjected in ſoldering, if they did not cauſe it warp, at leaſt rendered it ſo rough that it was neceſſary to fine-bore it afterwards. The only advantage therefore which theſe barrels were found to poſſeſs was their beautiful appearance; which was greatly overbalanced by the circumſtances juſt mentioned, as well as by the extravagant prices at which they were ſold; a ſingle barrel being ſold at 5l. and a double one at twice that ſum; whence the ſale of them never anſwered the expectation of the inventor, and after his death nobody thought of making them.

The Spaniſh barrels have long been held in great eſtimation, both on account of their being formed of better iron than thoſe of other countries, and likewiſe from an opinion of their being more perfectly forged and bored. Thoſe made at Madrid are the beſt, and even of theſe ſuch as have been made by former gunſmiths are in the greateſt eſtimation. The moſt celebrated Spaniſh gunſmiths were Nicholas Biz, who lived in the beginning of the preſent century, and died in 1724; and the barrels fabricated by him in the former part of his life are held in the greateſt eſtimation. Thoſe of his cotemporaries, Juan Belan and Juan Fernandez, are no leſs valued; all of their barrels ſelling in France at 1000 livres, or 45l. 15s. ſterling. The ſucceſſors of theſe great artiſts were Diego Eſquibal, Alonzo Martinez, Agoſtin Ortiz, Matthias Vaera, Luis Santos, Juan Santos, Franciſco Garcia, Franciſco Targarone, Joſeph Cano, and N. Zelaya. The moſt celebrated now in life are Franciſco Loper, Salvador Cenarro, Miguel Zeguarra, Iſidoro Soler, and Juan de Soto. The three firſt are gunſmiths to the king; and the barrels made by all of them ſell for 13l. ſterling. Almoſt all the Madrid barrels are compoſed of the old ſhoes of horſes and mules, which are collected for the purpoſe. They are manufactured firſt by welding longitudinally, and then being joined together in four or five pieces like the Engliſh barrels made from ſtubs, as already mentioned. In this, and indeed all other operations for making gun barrels, an immenſe waſte of the iron takes place; but that of the Spaniſh iron is by far the greateſt, a maſs of 40 or 45 pounds being required to make one barrel, which when rough from the forge weighs only ſix or ſeven pounds; ſo that from 30 to 38 pounds are loſt in the hammerings. It may perhaps, however, be doubted, whether the iron be really *purified* by this waſte; for it is certain, that by long continued working in the fire it may be rendered totally uſeleſs and deſtroyed; neither can we be aſſured that the other advantages pretended to reſult from their method of manufacture are of any conſequence. The Spaniſh artiſts likewiſe value themſelves on giving the inſide of their barrels a very high poliſh; but the advantage of this, as has already been obſerved, is extremely dubious. The only thing requiſite in a gun-barrel is that it do not *lead*; that is, that the mark of the bullet be not perceived on the inſide after it has been diſcharged, by ſome of the lead rubbed off as it paſſes through. In the opinion of very good judges, therefore, it is better to take a barrel immediately after it has undergone the operation of fine-boring than to give it any higher poliſh; and in ſupport of this opinion, M. de Marolles, an author of great reputation, informs us, that he has ſeen a barrel rough from the borer throw a charge of ſhot deeper into a quire of paper than one which was highly poliſhed within, though the length, bore, and charge were the ſame in both.

As the Spaniſh iron is univerſally allowed to be excellent, it has not been unreaſonably ſuppoſed that the ſuperiority of the barrels manufactured in that kingdom is owing more to the goodneſs of the materials than to the ſkill of the workmen. It muſt be obſerved, however, that inſtead of making the plates overlap a *little* in the place where they join, they give one of them a complete turn; ſo that every Spaniſh barrel may be ſaid to be double throughout its whole length. The different portions of the iron are alſo forged in ſuch a manner, that the grain of the iron is diſpoſed in a ſpiral manner; whence it has the ſame effect with a ribbon or twiſted barrel. The outſide is finiſhed by turning them in a lathe; whence probably they are always leſs elegantly wrought than the French and Engliſh pieces. The great value put upon them is alſo thought to be more owing to fancy than to any real good qualities they poſſeſs. Formerly they were made from three to three feet and a half long; their bore being ſuch as to admit a bullet from 22 to 24 in the pound; and their weight from three to three pounds and an half. The reinforced part extends two-fifths of the length; and at 10 or 12 inches from the breech is placed a *ſight*, ſuch as is uſually put upon rifle-barrels or thoſe intended only for ball. According to Eſpinas, arquebuſs-bearer to Philip IV. the weight of a Spaniſh barrel ought to be four pounds and an half when their length is 42 inches; but both weight and length are now much reduced, they ſeldom exceeding the dimenſion already mentioned. Next to the barrels made at Madrid, the moſt eſteemed are thoſe of Biſtindui and St Olabe at Placentia in Biſcay; and of Jeun and Clement Padweſteva, Eudal Pous, and Martin Marechal, at Barcelona; the uſual price of them being about 3l. 10s. ſterling.

Having now deſcribed the method of forging barrels, we ſhall next proceed to give an account of thoſe imperfections to which they are ſometimes liable; and which render them apt to burſt or recoil with violence. The principal of theſe are the *chink*, *crack*, and *flaw*. The firſt is a ſmall rent in the direction of the length of the barrel; the ſecond acroſs it; and the third is a kind of ſcale or ſmall plate adhering to the barrel by a narrow baſe from which it ſpreads out like the head of a nail from its ſhank, and when ſeparated leaves a pit or hollow in the metal. The chink or flaw are of much worſe conſequence than the crack in fire-arms, the force of the powder being exerted more upon the circumference than the length of the barrel. The flaw is much more frequent than the chink, the latter ſcarce ever occurring but in plain barrels formed out of a ſingle plate of iron, and then only when the metal is deficient in quality. When flaws happen on the outſide, they are of no great conſequence; but in the inſide they are apt to lodge moiſture and foulneſs which corrode the iron, and thus the cavity enlarges continually till the piece burſts. This accident, however, may ariſe from many other cauſes beſides the defect of the barrel itſelf. The beſt pieces will burſt when the ball is not ſufficiently rammed home, ſo that a ſpace is left between it and the powder. A very ſmall windage or paſſage for the inflamed powder between the ſides of the barrel and ball will be ſufficient to prevent the accident ; but if the ball has been forcibly driven down with an iron ramrod, ſo as to fill up the cavity of the barrel very exactly, the piece will almoſt certainly burſt, if only a very ſmall ſpace be left between it and the powder ; and the greater the ſpace is, the more certainly does the event take place. Of this Mr Robins gives a remarkable inſtance, accounting at the ſame time for the phenomenon. "A moderate charge of powder (ſays he), when it has expanded itſelf through the vacant ſpace and reaches the ball, will, by the velocity each part has acquired, accumulate itſelf behind the ball, and will thereby be condenſed prodigiouſly : whence, if the barrel be not of an extraordinary ſtrength in that part, it muſt infallibly burſt. The truth of this I have experienced in a very good Tower muſket forged of very tough iron : for charging it with 12 pennyweight of powder, and placing the ball looſely 16 inches from the breech ; on the firing of it the part of the barrel juſt behind the bullet was ſwelled out to double its diameter like a blown bladder, and two large pieces of two inches in length were burſt out of it." A piece will frequently burſt from having its mouth ſtopped up with earth or ſnow ; which accident ſometimes happens to ſportſmen in leaping a ditch in which they have aſſiſted themſelves with their fowling-piece, putting the mouth of it to the ground ; and when this does not happen, it is only to be accounted for from the ſtoppage being extremely ſlight. For the ſame reaſon a muſket will certainly burſt if it be fired with the muzzle immerſed only a very little way in water. It will alſo burſt from an overcharge ; but when ſuch an accident happens in other circumſtances, it is moſt probably to be attributed to a defect in the workmanſhip, or in the iron itſelf. Theſe defects are principally an imperfection in the welding, a deep flaw having taken place, or an inequality in the bore ; which laſt is the moſt common of any, eſpecially in the low-priced barrels. The reaſon of a barrel's burſting from an inequality in the bore is, that the elaſtic fluid, ſet looſe by the inflammation of the powder, and endeavouring to expand itſelf in every direction, being repelled by the ſtronger parts, acts with additional force againſt the weaker ones, and frequently burſts through them, which it would not have done had the ſides been equally thick and ſtrong throughout. With regard to defects ariſing from the bad quality of the iron, it is impoſſible to ſay any thing certain. As the choice of the materials depends entirely on the gunſmith, the only way to be aſſured of having a barrel made of proper metal is to purchaſe it from an artiſt of known reputation, and to give a conſiderable price for the piece.

The recoil of a piece becomes an object of importance only when it is very great ; for every piece recoils in ſome degree when it is diſcharged, the moſt frequent cauſe of an exceſſive recoil is an inequality in the bore of the barrel ; and by this it will be occaſioned even when the inequality is too ſmall to be perceived by the eye. The explanation of this upon mechanical prinicples indeed is not very eaſy ; for as it is there an invariable law, that action and reaction are equal to one another, we ſhould be apt to ſuppoſe that every time a piece is diſcharged it ſhould recoil with the whole difference between the velocity of the bullet and that of the inflamed powder. But were this the caſe, no man could fire a muſket without being deſtroyed ; for the bullet flies out only with a velocity of 1700 feet in a ſecond, or not much more, while that of the powder, as calculated by Mr Robins, is not leſs than 7000 feet in the ſame ſpace. But was the recoil to be made with the difference of theſe velocities, or with one half of it, it is plain that no man could bear it. The ſame thing therefore muſt take place in the recoil of a muſket which Dr Prieſtley obſerved in his experiments on the exploſion of inflammable and dephlogiſticated air, *viz.* that the force is exerted much more upon the part fartheſt from that where the inflammation begins than upon that next to it. At any rate, however, the ſtrength of the recoil will always be found proportionable to the weight of the piece ; that is, the lighter the piece is, the greater the recoil, and *vice verſa.* The recoil may be increaſed by any thing which retards the paſſage of the ſhot ; whence it is alſo augmented by the foulneſs of the barrel by repeated firing. M. de Marolles informs us alſo, that a piece will recoil, if, from the breech-plug being made too ſhort, ſome turns of the ſcrew remain empty ; as in theſe a part of the powder is lodged which forms an obſtacle to the exploſion ; though in what manner this exploſion takes place is not very apparent, as, though the powder lodged there might contribute little or nothing to the force of the exploſion, it can ſcarce be ſhown to ſtand in the way of it. The ſame author likewiſe informs us that a barrel mounted upon a very ſtraight ſtock will recoil more than one that is conſiderably bent. Sometimes alſo a fowling-piece will recoil from the ſportſman applying it improperly to his ſhoulder ; though this laſt circumſtance ſeems likewiſe inexplicable. It is moſt probable therefore that the ſuppoſed *greater* recoil taken notice of in this caſe, ariſes only from the uſual recoil being more ſenſibly felt in one poſition than another.

The cauſe to which too great a recoil in muſkets has been uſually attributed, is the placing of the touch-hole at ſome diſtance from the breech-plug ; ſo that the powder is fired about the middle, or towards its fore-part, rather than at its baſe. To avoid this, ſome artiſts form a groove or channel in the breech-plug, as deep as the ſecond or third turn of the ſcrew ; the touch-hole opening into this channel, and thus firing the powder at its very loweſt part. It appears, however, from a number of experiments made upon this ſubject by M. le Clerc gunſmith to the king of France, that it made very little difference with regard to the recoil, whether the touch-hole was cloſe to the breech or an inch diſtant from it. The only circumſtance to be attended to with reſpect to its ſituation therefore is, that it be not quite cloſe to the breech-plug ; as in ſuch a caſe it is found to be more apt to be choaked up than when placed about a quarter of an inch from it.

The only other circumſtance now to be determined with regard to muſket-barrels is their proper length. Formerly it was ſuppoſed that the longer they were made, the greater would be the diſtance to which they carried the ſhot, and that without any limitation. This opinion continued to prevail till about half a century ago, when it was firſt propoſed as a doubt whether long barrels carried farther than ſhort ones. With regard to cannon, indeed, it had long before this time been known that they might be made too long; and Balthazar Killar, a celebrated cannon-founder in the reign of Louis XIV. was able to account for it. When aſked by Monſ. Suriry de St Remy, why the culverin of Nancy, which is 22 feet long, did not carry a ball equally far with a ſhorter piece? he replied, that 'the powder, when inflamed, ought to quit the cavity of the piece in a certain time, in order to exert its whole force upon the bullet: by a longer ſtay, part of the force is loſt; and the ſame cauſe may produce an inequality in the ſhots, by giving a variation to the bullet, ſo as to deſtroy its rectilineal courſe, and throw it to one ſide or other of the mark." Mr Robins, who on this as well as every other queſtion in gunnery has almoſt exhauſted the ſubject, informs us, that "if a muſket-barrel, of the common length and bore be fired with a leaden bullet and half its weight of powder, and if the ſame barrel be afterwards ſhortened one half and fired with the ſame charge, the velocity of the bullet in this ſhortened barrel will be about one-ſixth leſs than what it was when the barrel was entire; and if inſtead of ſhortening the barrel, it be increaſed to twice its uſual length, when it will be near eight feet long, the velocity of the bullet will not hereby be augmented more than one-eight part. And the greater the length of the barrel is in proportion to the diameter of the bullet, and the ſmaller the quantity of powder, the more inconſiderable will theſe alterations of velocity be." From theſe conſiderations it appears, that the advantages gained by long barrels are by no means equivalent to the diſadvantages ariſing from the weight and incumbrance of uſing them; and from a multitude of experiments it is now apparent, that every one may chooſe what length he pleaſes, without any ſenſible detriment to the range of his piece. The moſt approved lengths are from 32 to 38 inches.

An opinion has generally prevailed among ſportſmen, that by ſome unknown manoeuvre the gunſmith is able to make a piece, loaded with ſmall ſhot, throw the contents ſo cloſe together that even at the diſtance of 40 or 50 paces the whole will be confined within the breadth of a hat. From ſuch experiments as have been made in this ſubject, however, it appears, that the cloſeneſs or wideneſs with which a piece throws its ſhot is liable to innumerable variations from cauſes which no ſkill in the gunſmith can poſſibly reach. So variable are theſe cauſes, that there is no poſſibility of making the ſame piece throw its ſhot equally cloſe twice ſucceſſively. In general, however, the cloſer the wadding is, the better diſpoſed the ſhot ſeems to be to fall within a ſmall compaſs. The cloſeneſs of the ſhot therefore would ſeem to depend in a great meaſure on preventing the flame of the powder from inſinuating itſelf among its particles; whence the following method is ſaid to be practiſed with ſucceſs by thoſe who ſhoot for a wager at a mark with ſmall ſhot; *viz.* to put in the ſhot by ſmall quantities at a time, ramming down a little tow or thin paper over each; ſo as to fill the interſtices of the grains, and thus prevent the flame from getting in amongſt the grains and ſcattering them. In firing with ſmall ſhot, a curious circumſtance ſometimes occurs, *viz.* that the grains, inſtead of being equally diſtributed over the ſpace they ſtrike, are thrown in cluſters of 10, 12, 15, or more; whilſt ſeveral conſiderable ſpaces are left without a grain in them. Sometimes one-third or one half of the charge will be collected into a cluſter of this kind; nay, ſometimes, though much more rarely, the whole charge will be collected into one maſs, ſo as to pierce a board near an inch thick at the diſtance of 40 or 45 paces. Small barrels are ſaid to be more liable to this cluſtering than large ones; and M. de Marolles informs us, that this is eſpecially the caſe when the barrels are new, and likewiſe when they are freſh-waſhed: though he acknowledges that it did not always happen with the barrels he employed even after they were waſhed. It is probable, therefore, that the cloſeneſs of the ſhot depends on ſome circumſtance relative to the wadding rather than to the mechaniſm of the barrel.

Some pieces are compoſed of two or more barrels joined together; in which caſe the thickneſs of each of the barrels is ſomewhat leſs than in ſingle-barrelled pieces. After being properly dreſſed each of them is filed flat on the ſide where they are to join each other, ſo that they may fit more cloſely together. The correſponding notches are then made at the muzzle and breech of each barrel; and into theſe are fitted two ſmall pieces of iron to hold them more ſtrongly together. Being then united by tinning the contiguous parts, a triangular piece of iron called the *rib* is faſtened on in like manner, running the whole length on the upper ſide; which ſerves to hold them more ſtrongly together. After this they are to be poliſhed and coloured in the manner deſcribed for ſingle barrels. Great care ſhould be taken that the barrels joined in this manner ſhould be quite equal in ſtrength to one another, and that both ſhould be quite upright, or of an equal thickneſs throughout. If any inequality takes place in the ſtrength of the barrels, the weaker will be warped by the action of the ſtronger, and the warping from this cauſe has ſometimes been ſo conſiderable as to render one of the barrels uſeleſs. To bring every part of the circumference of each barrel to an equal ſtrength as nearly as poſſible, ſo that no part may be ſtrained by the exploſion, that ſide where they touch each other muſt be ſo reduced, that the partition between the two calibers may be no thicker than either barrel was at the ſame place before it was filed to join in this manner. Formerly the double-barrelled pieces were made with one barrel lying over the other, each barrel having a ſeparate pan, hammer, and hammer-ſpring, but only one cock for both. The barrels were therefore made to turn round at the place where the breeches joined with the ſtock, ſo that as ſoon as one was fired off, the other could be brought into its place by preſſing a ſpring moved by the guard with the right hand, while with the left the barrels were turned upon their common axis; and as ſoon as the charged-barrel was thus brought into its proper ſituation, the ſpring deſcended into a notch and kept it firm. But this method was found to be too complicated and embarraſſed, though upon the ſame plan three and four barrels were ſometimes mounted upon one ſtock; but theſe pieces were intolerably heavy, and have no real ſuperiority over the double-barrelled pieces which do not turn round, and which of conſequence are now only made uſe of.

In forging barrels of all kinds, it is of conſiderable importance to have them made at firſt as near as poſſible to the weight intended when they are finiſhed, ſo that very little be taken away by the boring and filing: for as the outer ſurface, by having undergone the action of the hammer more immediately than any other part, is rendered the moſt compact and pure, we ſhould be careful to remove as little of it as poſſible; and the ſame holds, though in a leſs degree, with the inſide, which is to be cut with the borer. Piſtol-barrels are forged in one piece, two at a time, joined by their muzzles, and are bored before they are cut aſunder: by which means there is not only a ſaving of time and labour, but a greater certainty of the bore being the ſame in both.

GUNTER (Edmund), an excellent Engliſh mathematician and aſtronomer, was born in Hertfordſhire in 1581, and ſtudied at Weſtminſter-ſchool; from whence he removed to Oxford, where he took the degree of maſter of arts in 1606, and afterwards entered into holy orders. In 1615 he took the degree of bachelor of divinity: but being peculiarly eminent for his knowledge in the mathematics, he had two years before been choſen profeſſor of aſtronomy in Greſham-college, London; where he diſtinguiſhed himſelf by his lectures and writings. He invented a ſmall portable quadrant; and alſo the famous line of proportions, which, after the inventor, is called *Gunter's ſcale*. He likewiſe publiſhed *Canon Triangulorum*; and a work intitled Of the Sector, Croſs-ſtaff, and other inſtruments. This laſt was publiſhed, with an Engliſh tranſlation of his *Canon Triangulorum*, in 4to, by Samuel Foſter profeſſor of Greſham-college. Mr Gunter died at that colledge in 1626.

Gunter's Line, a logarithmic line, uſually graduated upon ſcales, ſectors, &c.

It is alſo called the *line of lines* and *line of number*: being only the logarithms graduated upon a ruler, which therefore ſerves to ſolve problems inſtrumentally in the ſame manner as logarithms do arithmetically. It is uſually divided into 100 parts, every tenth whereof is numbered, beginning with 1 and ending with 10: ſo that if the firſt great diviſion, marked 1, ſtand for one tenth of any integer, the next diviſion marked 2, will ſtand for two tenths, 3, three-tenths, and ſo on; and the intermediate diviſions will in like manner repreſent 100dth-parts of the ſame integer. If each of the great diviſions repreſent 10 integers, then will the leſſer diviſions ſtand for integers; and if the greater diviſions be ſuppoſed each 100, the ſubdiviſions will be each 10.

Uſe of Gunter's Line. 1. *To find the product of two numbers.* From 1 extend the compaſſes to the multiplier; and the ſame extent, applied the ſame way from the multiplicand, will reach to the product. Thus if the product of 4 and 8 be required, extend the compaſſes from 1 to 4, and that extent laid from 8 the ſame way will reach to 32. their product. 2. *To divide one number by another.* The extent from the diviſor to unity will reach from the dividend to the quotient: thus, to divide 36 by 4, extend the compaſſes from 4 to 1, and the ſame extent will reach from 36 to 9, the quotient ſought. 3. *To three given numbers to find a fourth proportional.* Suppoſe the numbers 6, 8, 9: extend the compaſſes from 6 to 8; and this extent, laid from 9 the ſame way, will reach to 12, the fourth proportional required. 4. *To find a mean proportional between the two given numbers.* Suppoſe 8 and 32; extend the compaſſes from 8, in the left-hand part of the line, to 32 in the right; then biſſecting this diſtance, its half will reach from 8 forward, or from 32 backward, to 16, the mean proportional ſought. 5. *To extract the ſquare root of any number.* Suppoſe 25: biſſect the diſtance between 1 on the ſcale and the point repreſenting 25: then the half of this diſtance, ſet off from 1, will give the point repreſenting the root 5. In the ſame manner the cube root, or that of any higher power, may be found by dividing the diſtance on the line between 1 and the given number into as many equal parts as the index of the power expreſſes; then one of thoſe parts, ſet from 1, will find the point repreſenting, the root required.

Gunter's Quadrant, one made of wood, braſs, &c. containing a kind of ſtereographic projection of the ſphere, on the plane of the equinoctial; the eye being ſuppoſed placed in one of the poles.

Gunter's Quadrant, called by navigators ſimply the *gunter*, is a large plain ſcale, generally two feet long, and about an inch and a half broad, with artificial lines delineated on it, of great uſe in ſolving queſtions in trigonometry, navigation, &c.

GUNWALE, or GUNNEL, is the uppermoſt wale of a ſhip, or that piece of timber which reaches on either ſide from the quarter-deck to the fore caſtle, being the uppermoſt bend which finiſhes the upper works of the hull, in that part in which are put the ſtanchions which ſupport the waſte-trees.

GURK, an epiſcopal town of Carinthia in Germany, ſeated on the river Gurk, in E. Long. 14. 15. N. Lat. 47. 10.

GURNARD, in ichthyology. See TRIGLA.

GUST, a ſudden and violent ſquall of wind, burſting from the hills upon the ſea ſo as to endanger the ſhipping near the ſhore. Theſe are peculiar to ſome coaſts, as thoſe of South Barbary and Guinea.

GUSTAVIA, in botany; a genus of the polyandria order, belonging to the monadelphia claſs of plants. There is no calyx: the petals very numerous; the berry multilocular; the ſeeds appendaged.

GUSTAVUS I. king of Sweden, ſon of Eric de Vaſa duke of Gripſholm. Chriſtian II. king of Denmark having made himſelf maſter of the kingdom of Sweden, confined Guſtavus at Copenhagen; but he making his eſcape wandered a long time in the foreſts, till the cruelties of the tyrant having occaſioned a revolution, he was firſt declared governor of Sweden, and in 1513 elected king. This prince introduced Lutheraniſm into his dominions, which in a little time ſpread itſelf all over the kingdom. He died in 1560; having made his kingdom hereditary, which was before elective. See SWEDEN.

Gustavus Adolphus, ſurnamed *the Great*, king of Sweden, was born at Sockholm in 1594, and ſucceeded his father Charles in 1611. He eſpouſed the cauſe of the Proteſtants in Germany, who were oppreſſed and almoſt entirely ruined by the emperor Ferdinand. He was a great warrior, and gained many victories of which an account is given under the article SWEDEN. He was at laſt killed in the battle of Lutzen, where his troops got the victory, and defeated two of the emperor's armies.

GUTHALUS, or GUTTALUS (anc. geog.), is

thought to be the *Viadrus* of Ptolemy. Now the *Oder*; which riſing in Moravia, runs through Sileſia, Brandenburg, and Pomerania, into the Baltic.

GUTTA, a Latin term for what in Engliſh we call *drop*.

Gutta Roſacea, in medicine, denotes a red or pimpled face; a diſtemper which, though not always owing its original to hard drinking, is nevertheleſs moſt incident to tipplers of ſtrong beer, wines, ſpirits, &c.

Gutta Serena, a diſeaſe in which the patient, without any apparent fault in the eye, is deprived of ſight. See (*Index* ſubjoined to) Medicine.

Gutta, in architecture, are ornaments in the form of little cones uſed in the Doric corniche, or on the architrave underneath the triglyphs, repreſenting a ſort or drops of bells.

GUTTURAL, a term applied to letters or ſounds pronounced or formed as it were in the throat.

GUTTY, in heraldry, a term uſed when any thing is charged or ſprinkled with drops. In blazoning, the colour of the drops is to be named; as gutty of ſable, of gules, &c.

GUY (Thomas), an eminent bookſeller, founder of the hoſpital for ſick and lame in Southwark bearing his name, was the ſon of Thomas Guy lighterman and coal-dealer in Horſley-down, Southwark. He was put apprentice, in 1660, to a bookſeller in the porch of Mercer's-chapel; and ſet up trade with a ſtock of about 200 l. in the houſe that forms the angle between Cornhill and Lombard-ſtreet. The Engliſh Bibles being at that time very badly printed, Mr Guy engaged with others in a ſcheme for printing them in Holland and importing them; but this being put a ſtop to, he contracted with the univerſity of Oxford for their privilege of printing them, and carried on a great bible-trade for many years to a conſiderable advantage. Thus he began to accumulate money, and his gains reſted in his hands; for being a ſingle man, and very penurious, his expences could not be great when it was his cuſtom to dine on his ſhop-counter which no other table covering than an old newſpaper; he was moreover as little ſcrupulous about the ſtyle of his apparel. The bulk of his fortune, however, was acquired by purchaſing ſeamens tickets during queen Anne's wars, and by South-Sea ſtock in the memorable year 1720. To ſhow what great events ſpring from trival cauſes, it may be obſerved, that the public owe the dedication of the greateſt part of his immenſe fortune to charitable purpoſes, to the indiſcreet officiouſneſs of his maid-ſervant in interfering with the mending of the pavement before the door. Guy had agreed to marry her; and, preparatory to his nuptials, had ordered the pavement before his door, which was in a neglected ſtate, to be mended, as far as to a particular ſtone which he pointed out. The maid, while her maſter was out, innocently looking on the paviers at work, ſaw a broken place that they had not repaired, and mentioned it to them: but they told her that Mr Guy had directed them not to go ſo far. Well, ſays ſhe, do you mend it: tell him I bade you, and I know he will not be angry. It happened, however, that the poor girl preſumed too much on her influence over her careful lover, with whom a few extraordinary ſhillings expence turned the ſcale totally againſt her: the men obeyed; Guy was enraged to find his orders exceeded, his matrimonial ſcheme was renounced, and ſo he built hoſpitals in his old age. In the year 1707 he built and furniſhed three wards on the north ſide of the outer court of St Thomas's Hoſpital in Southwark, and gave 100 l. to it annually for eleven years preceding the erection of his own hoſpital: and, ſome time before his death, erected the ſtately iron-gate, with the large houſes on each ſide, at the expence of about 3000 l. He was 76 years of age when he formed the deſign of building the hoſpital contiguous to that of St Thomas's, which bears his name, and lived to ſee it roofed in; dying in the year 1724. The charge of erecting this vaſt pile amounted to 18,793 l. and he left 219,499 l. to endow it; a much larger ſum than had ever been dedicated to charitable uſes in Britain by any one man. He erected an alms-houſe with a library at Tanworth in Staffordſhire (the place of his mother's nativity, and for which he was repreſentative in parliament) for 14 poor men and women; and for their penſions, as well as for the putting out poor children apprentices, bequeathed 125 l. a-year. Laſtly he bequeathed 1000 l. to every one who could prove themſelves in any degree related to him.

Guy, a rope uſed to keep ſteady any weighty body whilſt it is hoiſting or lowering, particularly when the ſhip is ſhaken by a tempeſtuous ſea.

Guy is likewiſe a large ſlack rope, extending from the head of the main-maſt to the head of the fore-maſt, and having two or three large blocks faſtened to the middle of it. This is chiefly employed to ſuſtain the tackle uſed to hoiſt in and out the cargo of a merchant ſhip, and is accordingly removed from the maſt-head as ſoon as the veſſel is laden or delivered.

Guy's Cliff, in Warwickſhire, a great cliff on the weſt ſide of the Avon and the north ſide of Warwick, where in the Britons time was an oratory, and in that of the Saxons a hermitage, where Guy earl of Warwick, who is ſaid to have retired to it after his fatigues by the toils and pleaſures of the world, built the chapel, and cohabited with the hermit; and that from thence it had the name. This hermitage was kept up to the reign of Henry VI. when Rich. Beauchamp earl of Warwick eſtabliſhed a chantry here, and in memory of the famous Guy erected a large ſtatue of him in the chapel eight feet in height, and raiſed a roof over the adjacent ſprings. The chapel is in the pariſh of St Nicholas, in the ſuburbs of Warwick.

GUYON (Johanna Mary Bourtiers de la Mothe), a French lady, memorable for her writings, and for her ſufferings in the cauſe of Quietiſm, was deſcended from a noble family, and born at Montargis in 1648. She gave ſome extraordinary ſymptoms of illumination from her earlieſt infancy; and tried to take the veil before ſhe was of age to diſpoſe of herſelf; but her parents obliged her to marry a gentleman to whom they had promiſed her. She was a widow at the age of 28: when diſtinguiſhing herſelf in, and making many converts to, the way of contemplation and prayer known by the name of *Quietiſm*, complaints were made of her ſpiritualiſm, and ſhe was confined by order of the king, and ſeverely examined for eight months. She was diſcharged; but was afterwards involved in the perſecution of the archbiſhop of Cambray, and thrown into the Baſtile, where ſhe underwent many examinations: but nothing being made out againſt her, ſhe once more obtained her liberty, and lived private to her death in 1717. She ſpent her latter years in myſtical reveries; covering her tables, ceilings, and every thing that would receive them, with the ſallies of a viſionary imagination. Her pious verſes were collected after her death in 5 vols. intitled *Cantiques ſpirituels, ou d'Emblemes ſur l'Amour Divin.* Her publications were, *Le moyen court et tres facile de faire Oraiſons*; and *Le Cantique des Cantiques de Salomon interprete ſelon le ſens myſtique*; which were condemned by the archbiſhop of Paris.

GWINIAD, in ichthyology. See SALMO.

GYARUS (anc. geog.), one of the Cyclades, 12 miles in compaſs, lying to the eaſt of Delos. It was a deſart iſland, and allotted for a place of baniſhment by the Romans.

GYBING, the act of ſhifting any boom-ſail from one ſide of the maſt to the other.

In order to underſtand this operation more clearly, it is neceſſary to remark, that by a boom-ſail is meant any ſail whoſe bottom is extended by a boom, the fore-end of which is hooked on its reſpective maſt; ſo as to ſwing occaſionally on either ſide of the veſſel, deſcribing an arch, of which the maſt will be the centre. As the wind or the courſe changes, it alſo becomes frequently neceſſary to change the poſition of the boom, together with its ſail, which is accordingly ſhifted to the other ſide of the veſſel as a door turns upon its hinges. The boom is puſhed out by the effort of the wind upon the ſail, and is reſtrained in a proper ſituation by a ſtrong tackle communicating with the veſſel's ſtern, and called the *ſheet*. It is alſo confined on the fore-part by another tackle called the *guy*.

GYGÆUS (anc. geog.), called alſo *Colous*; a lake of Lydia, diſtant 40 ſtadia, or 5 miles, from Sardes.

GYGES (fab. hiſt.), a Lydian, to whom Candaules king of the country ſhowed his wife naked. The queen was ſo incenſed at this inſtance of imprudence and infirmity of her huſband, that ſhe ordered Gyges either to prepare for death himſelf, or to put Canduales to death. He choſe the latter; and marrying the queen, aſcended the vacant throne about 718 years before the Chriſtian era. He was the firſt of the Mermnadæ who reigned in Lydia. He reigned 38 years, and diſtinguiſhed himſelf by the immenſe preſents which he made to the oracle of Delphi (*Herod.* 1. c. 8.)—According to Plato, Gyges deſcended into a chaſm of the earth, where he found a brazen horſe, whoſe ſides he opened, and ſaw within the body of the carcaſe a man of uncommon ſize, from whoſe finger he took a brazen ring. This ring, when he put it on his finger, rendered him inviſible; and by means of its virtue he introduced himſelf to the queen, murdered her huſband, and married her and uſurped the crown of Lydia. (*Cic. Off.* iii. c. 9.)

GYMNASIARCH, in antiquity, the director of the gymnaſium. He had two deputies under him: the one called *xyſtarch*, who preſided over the athletæ, and had the overſight of wreſtling; the other was *gymnaſtes*, who had the direction of all other exerciſes.

GYMNASIUM, in Grecian antiquity, a place fitted for performing exerciſes of the body, &c.—The word is Greek, formed of γυμνος, "naked;" by reaſon they anciently put off their clothes, to practiſe with the more freedom.

Gymnaſia, according to Potter, were firſt uſed at Lacedæmon, but were afterwards very common in all parts of Greece; and imitated, very much augmented, and improved, at Rome. There were three principal gymnaſia at Athens; the academy where Plato taught; the Lyceum, noted for Ariſtotle's lectures; and the Cynoſarges, allotted for the populace.

Vitruvius deſcribes the ſtructure and form of the ancient gymnaſia, lib. v. cap. 11. They were called *gymnaſia*, becauſe ſeveral of the exerciſes were performed naked; and *palæſtræ*, from wreſtling, which was one of the moſt uſual exerciſes there: the Romans ſometimes alſo called them *thermæ*, becauſe the baths and bagnios made a principal part of the building.—It appears that they did not perform their exerciſes quite naked ſo early as the time of Homer, but always in drawers; which they did not lay aſide before the 32d Olympiad. One Orſippus is ſaid to have been the firſt who introduced the practice: for having been worſted by means of his drawers undoing and entangling him, he threw them quite aſide, and the reſt afterwards imitated him. They were not ſingle edifices, but a knot of buildings united, being ſufficiently capacious to hold many thouſands of people at once; and having room enough for philoſophers, rhetoricians, and the profeſſors of all other ſciences to read their lectures,—and wreſtlers, dancers, and all others who had a mind to exerciſe,—at the ſame time without the leaſt diſturbance or interruption. They conſiſted of a great many parts. Vitruvius recites no leſs than 12, viz. 1. The exterior porticos, where the philoſophers, rhetoricians, mathematicians, phyſicians, and other virtuoſi, read public lectures, and where they alſo diſputed and rehearſed their performances. 2. The ephebeum, where the youth aſſembled very early, to learn their exerciſes in private, without any ſpectators. 3. The coryceum, apodyterion, or gymnaſterion, a kind of wardrobe, where they ſtripped, either to bathe, or exerciſe. 4. The elæotheſium, alipterion, or unctuarium, appointed for the unctions, which either preceded or followed the uſe of the bath, wreſtling, pancratia, &c. 5. The coniſterium or coniſtra, in which they covered themſelves with ſand or duſt, to dry up the oil or ſweat. 6. The palæſtra, properly ſo called, where they practiſed wreſtling, the pugillate, pancratia, and divers other exerciſes. 7. The ſphæriſterium or tennis-court, reſerved for exerciſes wherein they uſed balls. 8. Large unpaved alleys, which comprehended the ſpace between the porticos and the walls wherewith the edifice was ſurrounded. 9. The xyſti, which were porticos for the wreſtlers in winter or bad weather. 10. Other xyſtis or open alleys, allotted for ſummer and fine weather, ſome of which were quite open, and others planted with trees. 11. The baths, conſiſting of ſeveral different apartments. 12. The ſtadium, a large ſpace of a ſemicircular form, covered with ſand, and ſurrounded with ſeats for the ſpectators.

For the adminiſtration of the gymnaſia, there were different officers: the principal were, 1. The gymnaſiarcha, who was the director and ſuperintendant of the whole. 2. The xyſtarcha, who preſided in the xyſtus or ſtadium. 3. The gymnaſta, or maſter of the exerciſes, who underſtood their different effects, and could accommodate them to the different complexions of the athletæ. 4. The pædotriba, whoſe buſineſs was mechanically to teach the exerciſes, without underſtanding their theory or uſe. Under theſe four officers were a number of ſubalterns, whoſe names diſtinguiſhed their different functions.

The gymnaſtic exerciſes may be reduced to two general claſſes; as they depend either on the action of the body alone, or as they require external agents or inſtruments. The latter conſiſted chiefly in mounting the horſe, driving the chariot, and ſwimming. The former were chiefly of two kinds; orcheſtice, and palæſtrice.

The orcheſtice comprehended, 1. Dancing. 2. Cubiſtice, or the art of tumbling. 3. Sphæriſtice or tennis, including all the exerciſes with pilæ or balls.

The palæſtrice compriſed all exerciſes under the denomination *palæſtræ*; as wreſtling, boxing, pancratia, hoplomachia, running, leaping, throwing the diſcus, the exerciſe of the javelin, and that of the hoop, denominated by the Greeks τροχος, which conſiſted in rolling an iron hoop five or ſix feet in diameter, beſet with iron rings, the noiſe of which appriſing the people to give way, afforded them alſo an amuſement. Both ſtrength and ſkill were requiſite in directing his hoop, which was to be driven with an iron rod. To theſe muſt alſo be added the exerciſes belonging to the medicinal gymnaſtics; as, 1. Walking. 2. Vociferation or ſhouting. 3. Holding one's breath. Hoffman enumerates no fewer than 55 ſorts of exerciſes that were practiſed in the gymnaſia.

GYMNASTICS, GYMNASTICE, or the GYMNASTIC art, denotes the art of performing exerciſes of the body, whether for defence health, or diverſion. See GYMNASIUM.

Several modern writers have treated of this art. M. Burette has given the hiſtory of gymnaſtics in the Memoirs of the Royal Academy of Inſcriptions.

On the firſt eſtabliſhment of ſociety, men, being appriſed of the neceſſity of military exerciſes, for repelling the inſults of the neighbours, inſtituted games and propoſed prizes to animate their youth to combats of divers kinds. And as running, leaping, ſtrength and dexterity of arm in throwing the javelin, driving a ball, or toſſing a quoit, together with wreſtling, &c. were exerciſes ſuited to the manner of fighting in thoſe days; ſo the youth vied to excel in them, in the preſence of the aged, who ſat as their judges, and diſpenſed prizes to the conquerors; till what was originally only amuſement, became at length a matter of ſuch importance, as to intereſt great cities and entire nations in its practice. Hence aroſe an emulation and eagerneſs to excel, in hopes, one day, of being proclaimed and crowned conquerors in the public games, which was the higheſt honour a mortal could arrive at: nay, they went ſo far as to imagine, that even gods and demigods were not inſenſible of what men were ſo captivated with; and, in conſequence hereof, to introduce the greateſt part of theſe exerciſes into their religious ceremonies, the worſhip of their gods, and the funeral honours done to the manes of the dead.

Though it be hard to determine the preciſe epocha of the gymnaſtic art, yet it appears from ſeveral paſſages in Homer, and particularly the 23d book of the Iliad, where he deſcribes the games celebrated at the funeral of Patroclus, that it was not unknown at the time of the Trojan war. From that deſcription, which is the earlieſt monument now extant of the Grecian gymnaſtics, it appears, that they had chariot-races, boxing, wreſtling, foot-races, gladiators, throwing the diſcus, drawing the bow, and hurling the javelin; and it ſhould ſeem, from the particular account Homer gives of theſe exerciſes, that even then the gymnaſtic art wanted little of perfection: ſo that when Galen ſays there was no gymnaſtic art in Homer's days, and that it began to appear no earlier than Plato, he is to be underſtood of the medicinal gymnaſtics only. This laſt indeed had its riſe later; becauſe while men continued ſober and laborious, they had no occaſion for it; but when luxury and idleneſs had reduced them to the ſad neceſſity of applying to phyſicians, theſe, who had found that nothing contributed ſo much to the preſervation and re-eſtabliſhment of health as exerciſes, proportioned to the different complexions, ages, and ſexes, did not fail to refer them to the practice of gymnaſtics.

According to Plato, one Herodicus, prior a little time to Hippocrates, was the firſt who introduced this art into phyſic; and his ſucceſſors, convinced by experience of its uſefulneſs, applied themſelves in earneſt to improve it. Hippocrates, in his book of Regimen, has given inſtances of it, where he treats of exerciſe in general, and of the particular effects of walking, with regard to health, alſo of the different ſorts of races, either on foot or horſeback; leaping, wreſtling, the exerciſe of the ſuſpended ball, called *corycus*, chironomy, unctions, frictions, rolling in the ſand, &c. But as phyſicians did not adopt all the exerciſes of the gymnaſtic art in their practice, it came to be divided between them and the maſters of martial and athletic exerciſes, who kept ſchools, the number of which was greatly increaſed in Greece. At length the Romans alſo caught the ſame taſte; and, adopting the military and athletic exerciſes of the Greeks, they improved and advanced them to the utmoſt pitch of magnificence, not to ſay extravagance. But the declenſion of the empire involved the arts in its ruin, and, among others, gymnaſtics and medicine; which laſt unhappily then relinquiſhed the title it had to the former, and has neglected to reſume it ever ſince.

GYMNOPYRIS, in natural hiſtory, a name given by Dr Hill to the pyritæ of a ſimple internal ſtructure, and not covered with a cruſt. See PYRITES.

Of theſe there are only two ſpecies. 1. A green variouſly ſhaped kind. 2. A botryoide kind.

The firſt ſpecies is the moſt common of all the pyritæ, and appears under a great diverſity of ſhapes. It is very hard and heavy, very readily gives fire with ſteel, but will not at all ferment with aquafortis. The ſecond ſpecies is very elegant and beautiful, and its uſual co~~lour is~~ very agreeable pale green; but what moſt diſtinguiſhes ~~it~~ from all other pyritæ is, that its ſurface is always beautifully elevated into tubercles of various ſizes, reſembling a cluſter of grapes.

GYMNOSOPHISTS, a ſet of Indian philoſophers, famous in antiquity; ſo denominated from their going barefoot. The word is formed of the Greek γυμνοσοφιϛης, q. d. a ſophiſt or philoſopher who goes naked.

This name was given to the Indian philoſophers, whom the exceſſive heat of the country obliged to go naked; as that of *Peripatetics* was given to thoſe who philoſophiſed walking. The Gymnoſophiſts, however, did not go abſolutely naked; but only clothed themſelves no farther than modeſty required. There were ſome of theſe ſages in Africa; but the moſt celebrated clan of them was in India. The African gymnoſophiſts dwelt upon a mountain in Æthiopia, near the Nile, without the accommodation either of houſe or cell. They did not form themſelves into ſocieties like thoſe of India; but each had his private receſs, where he ſtudied and performed his devotions by himſelf. If any perſon had killed another by chance, he applied to theſe ſages for abſolution, and ſubmitted to whatever penances they enjoined. They obſerved an extraordinary frugality, and lived only upon the fruits of the earth. Lucan aſcribes to theſe Gymnoſophiſts ſeveral new diſcoveries in aſtronomy.

As to the Indian Gymnoſophiſts, they dwelt in the woods, where they lived upon the wild products of the earth, and never drank wine nor married. Some of them practiſed phyſic, and travelled from one place to another; theſe were particularly famous for their remedies againſt barrenneſs. Some of them, likewiſe, pretended to practiſe magic, and to fortel future events.

In general, the Gymnoſophiſts were wiſe and learned men: their maxims and diſcourſes, recorded by hiſtorians, do not in the leaſt ſavour of a barbarous education; but are plainly the reſult of great ſenſe and deep thought. They kept up the dignity of their character to ſo high a degree that it was never their cuſtom to wait upon any body, not even upon princes themſelves. They believed the immortality and tranſmigration of the ſoul: they placed the chief happineſs of man in a contempt of the goods of fortune and the pleaſures of ſenſe, and gloried in having given faithful and diſintereſted counſels to princes and magiſtrates. It is ſaid, that when they became old and infirm, they threw themſelves into a pile of burning wood, in order to prevent the miſeries of an advanced age. One of them, named *Calamus*, thus burnt himſelf in the preſence of Alexander the Great.

Apuleius† deſcribes the Gymnoſophiſts thus: "They are all devoted to the ſtudy of wiſdom, both the elder maſters and the younger pupils; and what to me appears the moſt amiable thing in their character is, that they have an averſion to idleneſs and indolence: accordingly, as ſoon as the table is ſpread, before a bit of victuals be brought, the youths are all called together from their ſeveral places and offices, and the maſters examine them what good they have done ſince the ſun-riſe: here one relates ſomething he has diſcovered by meditation; another has learned ſomething by demonſtration; and as for thoſe who have nothing to allege why they ſhould dine, they are turned out to work faſting."

† *Florid.* lib. I.

The great leader of the Gymnoſophiſts, according to Jerome, was one *Buddas*, called by Clemens Butta, who is ranked by Suidas among the Brachmans. That laſt author makes Buddas, the preceptor of Manes the Perſian, the founder of the Gymnoſophiſts.

GYMNOSPERMIA, in botany, (from γυμνος "naked," and σπερμα "ſeed;") the firſt order in Linnæus's claſs of didynamia. It comprehends thoſe plants of that claſs which have naked ſeeds. The ſeeds are conſtantly four in number, except in one genus, viz. phryma, which is monoſpermous. See BOTANY, p. 431.

GYMNOTUS in ichthyology, a genus of fiſhes belonging to the order of apodes. They have two tentacula at the upper lip; the eyes are covered with the common ſkin; there are five rays in the membrane of the gills; the body is compreſſed, and carinated on the belly with a fin. There are five ſpecies, the moſt remarkable of which is the *electricus*, or electric eel, called by the French *anguille tremblante*. This ſpecies is peculiar to Surinam; and is found in the rocky parts of the river, at a great diſtance from the ſea. The moſt accurate deſcription we have of this fiſh is in the Philoſophical Tranſactions for 1775, where Alex. Garden, M. D. gives an account of three of them brought to Charleſtown in South Carolina. The largeſt was about three feet eight inches in length, and might have been from 10 to 14 inches in circumference about the thickeſt part of its body. The head was large, broad, flat, and ſmooth, impreſſed here and there with holes, as if perforated with a blunt needle, eſpecially towards the ſides, where they were more regularly ranged in a line on each ſide. There were two noſtrils on each ſide; the firſt large, tubular, and elevated above the ſurface; the others ſmall, and level with the ſkin. The eyes were ſmall, flattiſh, and of a bluiſh colour, placed about three quarters of an inch behind the noſtrils. The whole body, from about four inches below the head was clearly diſtinguiſhed into four longitudinal parts or diviſions. The upper part or back was of a dark colour, and ſeparated from the other parts on each ſide by the *lateral lines*. Theſe lines took their riſe at the baſe of the head, juſt above the pectoral fins, and run down the ſides, gradually converging as the fiſh grew ſmaller to the tail. The ſecond diviſion was of a lighter and clearer colour than the firſt, inclining to blue. It ſeemed to ſwell out on each ſide; but towards the under part of it is again contracted and ſharpened into the third part or *carina*. This part is eaſily diſtinguiſhed from the other two by its thinneſs, its apparent laxneſs, and by the reticulated ſkin of a more grey and light colour, with which it is covered. The carina begins about ſix or ſeven inches below the baſe of the head; and gradually deepening or widening as it goes along, reaches down to the tail, where it is thinneſt. The fourth part is a long, deep, ſoft, and wavy fin, which takes its riſe about three or four inches at moſt below the head; and thus runs down the ſharp edge of the carina to the extremity of the tail. The ſituation of the anus was very ſingular; being an inch more forward than the pectoral fins. Externally it ſeemed to be a pretty large *rima;* but the formed excrements were only the ſize of a quill of a common dunghill-fowl. There were two pectoral fins ſituated juſt behind the head, ſcarcely an inch in length; of a very thin, delicate conſiſtence, and orbicular ſhape. They ſeemed to be chiefly uſeful in ſupporting and raiſing the head of the fiſh when he came up to breathe; which he was obliged to do every four or five minutes. Acroſs the body were a number of ſmall bands, annular diviſions, or rather *rugæ* of the ſkin. By means of theſe the fiſh ſeemed to partake of the vermicular nature, had the power of lengthening or ſhortening its body like a worm, and could ſwim backwards as well as forwards, which is another property of the vermicular tribe. Every now and then it laid itſelf on one ſide in the water as if to reſt.—For an account of the ſingular properties of this fiſh, ſee ELECTRICITY, n° 255.

Plate CCXXI.

GYNÆCEUM, among the ancients, the apartment of the women, a ſeparate room in the inner part of the houſe, when they employed themſelves in ſpinning, weaving, and needle-work.

GYNÆCOCRACY, denotes the government of women, or a ſtate where women are capable of the ſupreme command. Such are Britain and Spain.

GYNÆCOCRATUMENI, an ancient people of Sarmatia Europæa, inhabiting the eaſtern banks of the river Tanais, near its opening into the Palus Mæotis; thus called, as authors relate, becauſe they had no women among them; or, rather, becauſe they were under the dominion of women. The word is formed of γυνη *woman*, and κρατουμενος *vanquiſhed*, of κρατεω *I overcome* q. d. overcome by women.

Fa. Hardouin, in his notes on Pliny, ſays, they were thus called, becauſe after a battle which they loſt againſt the Amazons, on the banks of the Thermodoon, they were obliged to have venereal commerce with them, in order to get them children: *Et quod victricibus obſequantur ad procurandam eis ſobolem.*—Hardouin calls them the huſbands of the Amazons, *Amazonum connubia*; for, as the author obſerves, the word *unde* muſt be retrenched from Pliny, having been foiſted into the text by people who were not maſters of the author's meaning, *unde Amazonum connubia.* See Amazons. They who take the Amazons for a fabulous people, will conclude the ſame of the Gynæcocratumenians.

GYNANDRIA, (from γυνη a "woman;" and ανηρ a "man.") The name of the 20th claſs in Linnæus's ſexual ſyſtem, conſiſting of plants with hermaphrodite flowers, in which the ſtamina are placed upon the ſtyle, or, to ſpeak more properly, upon a pillar-ſhaped receptacle, reſembling a ſtyle, whhich riſes in the middle of the flower, and bears both the ſtamina and pointal; that is, both the ſuppoſed organs of generation. See Botany, p. 430.

The flowers of this claſs, ſays Linnæus, have a monſtrous appearance, ariſing, as he imagines, from the ſingular and unuſual ſituation of the parts of fructification.

GYPSIES, or Egyptians, an outlandiſh tribe of vagabonds, who diſguiſing themſelves in uncouth habits, ſmearing their faces and bodies, and framing to themſelves a canting language, wander up and down, and, under pretence of telling fortunes, curing diſeaſes, &c. abuſe the common people, trick them of their money, and ſteal all that they can come at.

They are a ſtrange kind of commonwealth among themſelves of wandering impoſtors and jugglers, who made their firſt appearance in Germany about the beginning of the 16th century. Munſter, it is true, who is followed and relied upon by Spelman, fixes the time of their firſt appearance to the year 1417: but as he owns that the firſt whom he ever ſaw were in 1529, it is probably an error of the preſs for 1517; eſpecially as other hiſtorians inform us, that when Sultan Selim conquered Egypt in the year 1517, ſeveral of the natives refuſed to ſubmit to the Turkiſh yoke, and revolted under one Zinganeus; whence the Turks call them Zinganees; but being at length ſurrounded and baniſhed, they agreed to diſperſe in ſmall parties all over the world, where their ſuppoſed ſkill in the black art gave them an univerſal reception in that age of ſuperſtition and credulity. In the compaſs of a very few years they gained ſuch a number of idle proſelytes (who imitated their language and complexion, and betook themſelves to the ſame arts of chiromancy, begging, and pilfering), that they became troubleſome, and even formidable to moſt of the ſtates of Europe. Hence they were expelled from France in the year 1560, and from Spain in 1591. And the government of England took the alarm much earlier: for in 1530 they are deſcribed by Stat. 22. Hen. VIII. c. 10. as "an outlandiſh people calling themſelves Egyptians, uſing no craft nor ſeat of merchandize, who have come into this realm, and gone from ſhire to ſhire, and place to place, in great companies, and uſed great, ſubtle, and crafty means to deceive the people; bearing them in hand that they by palmiſtry could tell mens and womens fortunes; and ſo many times by craft and ſubtilty have deceived the people of their money, and alſo have committed many heinous felonies and robberies." Wherefore they are directed to avoid the realm, and not to return under pain of impriſonment, and forfeiture of their goods and chattels; and upon their trials for any felony which they may have committed, they ſhall not be entitled to a jury *de medietate linguæ*. And afterwards it is enacted, by ſtatutes 1ſt and 2d Ph. and Mary, c. 4. and 5th Eliz. c. 20. that if any ſuch perſons ſhall be imported into the kingdom, the importer ſhall forfeit 40l. And if the Egyptians themſelves remain one month in the kingdom, or if any perſon being 14 years old, whether natural born ſubject or ſtranger which hath been ſeen or found in the fellowſhip of ſuch Egyptians, or which hath diſguiſed him or herſelf like them, ſhall remain in the ſame one month at one or ſeveral times, it is felony without benefit of clergy. And Sir M. Hale informs us, that at one Suffolk aſſizes no leſs than 13 perſons were executed upon theſe ſtatutes a few years before the reſtoration. But, to the honour of the national humanity, there are no inſtances more modern than this of carrying theſe laws into practice; and the laſt ſanguinary act is itſelf now repealed by 23 Geo. III. c. 54.

In Scotland they ſeem to have enjoyed ſome ſhare of indulgence; for a writ of privy ſeal, dated 1594, ſupports John Faw, lord and earl of Little Egypt, in the execution of juſtice on his company and folk, conform to the laws of Egypt, and in puniſhing certain perſons there named who rebelled againſt him, left him, robbed him, and refuſed to turn home with him. James's ſubjects are commanded to aſſiſt in apprehending them, and in aſſiſting Faw and his adherents to return home. There is a like writ in his favour from Mary Q. of Scots 1553, and in 1554 he obtained a pardon for the murder of Nunan Small. So that it appears he had ſtaid long in Scotland, and perhaps ſome of the time in England; and from him this kind of ſtrolling people might receive the name of *Faw Gang*, which they ſtill retain.

A very circumſtantial account of this ſingular race of vagrants has been lately given in an expreſs *Inquiry* concerning them, written in German by H. M. G. Grellman, and tranſlated by Mr Raper. It is incredible to think how this regular ſwarm of banditti has ſpread itſelf over the face of the earth. They wander about in Aſia, in the interior parts of Africa, and, like locuſts, have over-run moſt of the European nations.

In the reigns of Henry VIII. and queen Elizabeth, as we have ſeen, they were ſet up as a mark of general perſecution in England; yet their numbers do not appear to have much diminiſhed. Spain is ſuppoſed by Mr Twiſs to contain 40,000 of theſe vagrants; but by others 60,000; and by ſome even double that number. They are leſs numerous in France in conſequence of the ſtrictneſs of the police. In Italy they abound, eſpecially in the dominions of the church, on account of the bad police and the prevalence of ſuſuperſtition, which permit and entice them to deceive the ignorant. They are ſcattered, thought not in great numbers, through Germany, Denmark, Sweden, and Ruſſia; but their chief population is in the ſouth-eaſt parts of Europe, which ſeem to be the general rendezvous of the gypſy nation. At a moderate computation Europe contains more than ſeven hundred thouſand of theſe vagabonds.—For near four centuries they have wandered through the world; and in every region, and among every people, whether barbarous or civiliſed, they have continued equally unchanged by the lapſe of time, the variation of climate, and the force of example. Their ſingular phyſiognomy and particular manners are the ſame in every country. Their ſwarthy complexion receives no darker ſhade from the burning ſun of Africa, nor any fairer tincture from the temperate climates in Europe; they contract no additional lazineſs in Spain, nor acquire any new induſtry in England: in Turkey they behold the moſque and the creſcent with equal indifference as they do the reformed and the catholic church in Europe. In the neighbourhood of civiliſed life they continue barbarous; and, beholding around them cities and ſettled inhabitants, they live in tents or holes in the earth, and wander from place to place as fugitives and vagabonds.

They are paſſionately fond of ornaments: in which however they conſult neither propriety nor conſiſtency; they will wear an old laced coat, while the reſt of the garments ſcarcely hang together. In Hungary and Tranſylvania, their ſummer habitations are tents; their winter ones holes 10 or 12 feet deep in the earth, except ſuch as keep inns, or exerciſe trades. They are fond of plate, particularly ſilver cups, which they bury under the hearth for ſecurity. Their principal occupations are, ſmith's work, or tinkers, or wooden ware, and horſe-dealing; and in Hungary and Tranſylvania they are executioners of criminals, flayers of dead beaſts, and waſhers of gold. The women deal in old cloaths, proſtitution, wanton dances, and fortune-telling. Notwithſtanding theſe occupations, the majority of this people are lazy, beggars, and thieves. They bring up their children to their own profeſſions, and are very fond of them. They have few diſorders, except the meaſles and ſmall-pox, and weakneſs in their eyes, occaſioned by ſmoke, and live to an advanced age, with a ſtrong attachment to life. Their phyſic is ſaffron in their ſoups, or bleeding.

Theſe people, however, appear to be diſtinguiſhed by different ſingularities in different countries. At leaſt in the following circumſtance the German gypſies differ widely from thoſe commonly met within England. It is a great feaſt to them our author ſays, whenever they can procure a roaſt of cattle that died of any diſtemper, it is all one to them, whether it be a carrion of a ſheep, hog, cow, or other beaſt, horſe-fleſh only excepted; they are ſo far from being diſguſted with it, that to eat their fill of ſuch a meal, is to them the height of epicuriſm. When any one cenſures their taſte, or ſhows ſurpriſe at it, they anſwer, "The fleſh of a beaſt which God kills, muſt be better than one killed by the hand of man." They therefore take every opportunity of getting ſuch dainties. That they take carrion from a layſtall, as is affirmed of the gypſies in Hungary, is by no means certain, any more than that they eat horſe-fleſh. But if a beaſt out of an herd dies, and they find it before it becomes rotten and purified; or if a farmer gives them notice of a cow dead, they proceed without heſitation, to get poſſieſſion of this booty. Their favourite object is animals that have been deſtroyed by fire; therefore, whenever a conflagration has happened, either in town or country, the next day the gypſies, from every neighbouring quarter, aſſemble and draw the ſuffocated half conſumed beaſt out of the aſhes. Men, women, and children, in troops, are extremely buſy, joyfully carrying the fleſh home to their dwelling-places; they return ſeveral times, provide themſelves plentifully with this roaſt meat, and gluttonize in their huts as long as their noble fare laſts.

The gypſies have, at leaſt in Tranſylvania, a ſort of regular government, rather nominal than real or effective. They have their leaders or chiefs, whom they diſtinguiſh by the Sclavonian title, *Waywode*. To this dignity every perſon is elegible who is of a family deſcended from a former waywode; but the preference is generally given to thoſe who have the beſt clothes and the moſt wealth; who are of a large ſtature, and not paſt the meridian of life.—Of religion, however, they have no ſenſe; though, with their uſual cunning and hypocriſy, they profeſs the eſtabliſhed faith of every country in which they live. They alſo ſpeak the languages of the reſpective countries, yet have a language of their own; from whence derived, authors differ. The only ſcience which they have attained is muſic. Their poetry is ungrammatical indecent rhyme.

Their general character and capacities are thus deſcribed: Imagine people of a childiſh way of thinking; their minds filled with raw, undigeſted conceptions; guided more by ſenſe than reaſon; uſing underſtanding and reflection ſo far only as they promote the gratification of any particular appetite; and you have a perfect ſketch of the gypſies character. They are lively, uncommonly loquacious and chattering; fickle in the extreme, conſequently inconſtant in their purſuits; faithleſs to every body, even their own caſt; void of the leaſt emotion of gratitude, frequently rewarding benefits with the moſt inſidious malice. Fear makes them ſlaviſhly compliant when under ſubjection; but having nothing to apprehend, like other timorous people, they are cruel. Deſire of revenge often cauſes them to take the moſt deſperate reſolutions. To ſuch a degree of violence is their fury ſometimes excited, that a mother has been known in the exceſs of paſſion, to take her ſmall infant by the feet, and therewith ſtrike the object of her anger, when no other inſtrument has readily preſented itſelf. They are ſo addicted to drinking, as to ſacrifice what is moſt neceſſary to them, that they may feaſt their palate with ſpirits. They have, too, what one would little expect, an enormous ſhare of vanity, which ſhows itſelf in their fondneſs for fine clothes, and their gait and deportment when dreſſed in them. One would imagine, that this pride would have the good effect to render a gypſy cautious not to be guilty of ſuch crimes as ſubject him to public ſhame; but here comes in the levity of character, for he never looks to the right nor to the left in his tranſactions. In an hour's time he forgets that he is juſt untied from the whipping poſt. But their pride is grounded on mere idle conceit, as appears plainly from their making it a point of honour to abuſe their companions, and put on a terrible appearance in the public market, where they are ſure to have many ſpectators; they cry out, make a violent noiſe, challenge their adverſary to fight, but very ſeldom any thing comes of it. Thus the gypſy ſeeks honour, of which his ideas coincide very little with thoſe of other people, and ſometimes deviate entirely from propriety.

“ Nothing (continues our author) can exceed the unreſtrained depravity of manners exiſting among theſe people, I allude particularly to the other ſex. Unchecked by any idea of ſhame, they give way to every deſire. The mother endeavours, by the moſt ſcandalous arts, to train up her daughter for an offering to ſenſuality; and *this* is ſcarce grown up before ſhe becomes the ſeducer of others. Lazineſs is ſo prevalent among them, that were they to ſubſiſt by their own labour only, they would hardly have bread for two of the ſeven days in the week. This indolence increaſes their propenſity to ſtealing and cheating, the common attendants on idleneſs. They ſeek to avail themſelves of every opportunity to ſatisfy their lawleſs deſires. Their univerſal bad character therefore for fickleneſs, infidelity, ingratitude, revenge, malice, rage, depravity, lazineſs, knavery, thieviſhneſs, and cunning, though not deficient in capacity and cleverneſs, render theſe people of no uſe in ſociety, except as ſoldiers to form mauraudING parties. Perſons in their company, and under their diſguiſe, have formed dangerous deſigns againſt cities and countries. They have been baniſhed from almoſt all civilized ſtates, in their turn, except Hungary and Tranſylvania, and to little purpoſe. Our author is of opinion, that as Turkey would allow them toleration, it would be better for the European ſtates to take ſome ſteps for cultivating and civilizing them, and making them uſeful. But while they are inſenſible of religion and ſtrongly attached to their own manners, it is to be feared the attempt will be impracticable. This appears from a very intelligent Hungarian lady's experience on the ſubject, communicated in a letter as follows:—‘There are a great number of them on my eſtates, but I have permitted two families in particular to eſtabliſh themſelves at the place of my own reſidence, under the expreſs condition that no others ſhall come here and join them. I took all poſſible pains to make them reaſonable creatures. I ſet the elder ones to work; the younger ones tend the cattle. I obſerved that they were more fond of horſes than any thing elſe; for which reaſon I placed a gypſy under each groom. I had their children clothed, that none of them might be running about naked, according to their uſual practice. It appeared, however, that cuſtom was become nature with them. The old ones worked diligently ſo long as any body ſtood over them; the moment their back was turned, they all got together in a circle, their legs acroſs, facing the ſun, and chattered. Thus they cannot poſſibly earn more, indeed hardly ſo much, as would find them bread, although very cheap with us; for the bread I give them does not ſtand me in half a kreutzer the pound. Even in winter they cannot bear a hat on their head nor ſhoes on their feet. The boys run like wild things wherever they are ſent, either on foot or on horſeback; but they ſpoil horſes unmercifully; beat them on the head, jerk the bits in their mouths, ſo as to make them run down with blood. They cannot be brought by any means whatever to dreſs horſes. Cloath them as you will, they always ſell or loſe their cloaths. In a word, one cannot but conſider them as void of reaſon; it is really ſhocking to ſee even well grown children put whatever they find into their mouths, like infants before they can ſpeak; wherefore they eat every think, even carrion, let it ſtink never ſo much. Where a mortality happens among the cattle, there theſe wretched beings are to be found in the greateſt numbers.’

The origin of this people, as we have ſeen, has been generally believed to be Egyptian; and that belief is as old as their exiſtence in Europe. Thomaſius, Salmon the Engliſh geographer, and lately Signior Griſelini, have endeavoured to prove it by ſatisfactory evidence. This theory, however, according to our author, is without foundation. The Egyptian deſcent of theſe people, he thinks, is not only deſtitute of proofs, but the moſt poſitive evidence is found to contradict it. Their language differs entirely from the Coptic; and their cuſtoms are very different from thoſe of the Egyptians. They are indeed to be found in Egypt; but they wander about there as ſtrangers, and form a diſtinct people, as in other countries. The expreſſions of Bellonius are ſtrong and deciſive; “ No part of the world, I believe is free from thoſe banditti, wandering about in troops, whom we by miſtake call *Egyptians* and *Bohemians*. When we were at Cairo, and in the villages bordering on the Nile, we found troops of theſe ſtrolling thieves ſitting under palm trees: and they are eſteemed foreigners in Egypt as well as among us.”

The Egyptian deſcent of the gypſies being rejected, our author next endeavours to ſhow that they come from Hindoſtan. The chief baſis of his theory, however, is no other than that very dubious one, a ſimilarity of language. He adds a long vocabulary of the gipſy and the Hindoſtanic languages; in which, it muſt be confeſſed, many words are the ſame; but many are different. A principal proof which he adduces on this head is from the relation of Captain Szekely von Doba, to whom a printer in 1763 related, that a preacher of the Reformed church, when a ſtudent at Leyden, being intimately acquainted with three young Malabar ſtudents, took down 1000 of their words, which he fancied correſponded with the gipſy language; and they added, that a tract of land in their iſland was named *Ozigania*. He repeated theſe words to the Raber gypſies, who explained them without trouble or heſitation. This account was publiſhed in the Vienna Gazette. Suppoſing theſe three young men to be ſons of Bramins, who uſe the Sanſcrit, the common language of Hindoſtan comes as near to that as modern Italian to pure Latin. The compariſon of the two languages takes up above 30 pages; and Mr Grellman thinks it eſtabliſhes his ſyſtem. The ſame opinion is maintained by Mr Marſden, in a paper upon this ſubject in the 7th volume of the Archeologia. The numerals, however, both in Hindoſtanic and gipſy, differ greatly as ſtated by the two authors. And here, as in other ſuch compariſons, one is aſtoniſhed at the credulity of the comparers of orthoepy and orthography (as a periodical critic obſerves), which can have no connection in languages with which we are not perfectly familiar, even were both languages reduced to writing by their reſpective people: how much leſs, then, where one of the two languages is never reduced to writing, as is the caſe of the gipſy, but is blended with the language of the country where the clan reſides? This appears from the correſpondence of ſeveral words in all languages with the gipſy. Mr Grellman acknowledges the two gipſy verſions of the Lord's Prayer, at different periods, differ ſo widely, that one would almoſt be inclined to doubt whether they were really the ſame language. We think we can diſcern a few words differently indeed written, but probably pronounced alike. Nor can we, in all the languages in which Chamberlayne gives the Lord's Prayer, perceive the leaſt reſemblance to the gipſy name of father, *Dade* and *Dad*, except in the Welſh, *Taad*. In proſecuting his argument, Mr Grellman does not inſiſt on the ſimilarity of colour between the two people, nor on the cowardice common to both, nor on the attachment of the Indians to tents, or letting their children go naked; all theſe being traits to be met with in other nations: but he dwells on the word *Polgar*, the name of one of the firſt gipſy leaders, and of the Indoſtanic god of marriage; alſo on the correſpondence between the travelling ſmiths in the two people, who carry two pair of bellows; the Indian's boy blows them in India, the wife or child of the gipſy in Europe: As if every travelling tinker, in every nation where tinkers travel, had not the ſame journeymen. In laſcivious dances and chiromancy the two people agree; nor are theſe uncommon in other parts of the globe. The exceſſive loquacity of the two people is produced as ſimilar; as if no other nations in the world were loquacious. Fainter reſemblances are, a fondneſs for ſaffron, and the intermarrying only with their own people. The laſt poſition in the author's theory is that the gipſies are of the loweſt claſs of Indians, namely, *Parias*, or, as they are called in Hindoſtan, *Suders*. He compares the manners of this claſs with thoſe of the gipſies, and enumerates many circumſtances in which they agree: ſome of the compariſons are frivolous, and prove nothing. As an inſtance of which we may take the following: 'Gipſies are fond of being about horſes; the Suders in India likewiſe, for which reaſon they are commonly employed as horſe-keepers by the Europeans reſident in that country.' This reaſoning does not prove that the gipſies are Suders, any more than that they are Arabians or Yorkſhire farmers.

The objections, however, to which this learned and induſtrious author's theory is liable, are ſuch as only ſhow it to be by no means ſatisfactory; but do not prove that it is wrong. It may poſſibly be right; and upon this ſuppoſition the cauſe of their emigration from their country, he conjectures, not without probability, to be the war of Timur Beg in India. In the years 1408 and 1409 this conqueror ravaged India; and the progreſs of his arms was attended with devaſtation and cruelty. All who made reſiſtance were deſtroyed; thoſe who fell into the enemy's hands were made ſlaves; of theſe very ſlaves 100,000 were put to death. As on this occaſion an univerſal panic took place, what could be more natural than that a great number of terrified inhabitants ſhould endeavour to ſave themſelves by flight?—In the laſt place, the author endeavours to trace the route by which the gipſies came from Hindoſtan to Europe: but here he juſtly acknowledges that all that can be ſaid on the ſubject is mere ſurmiſe; and, upon the whole, after peruſing all the preceding details, the reader will probably be of opinion that there ſtill hangs a cloud over the origin of this extraordinary race.

GYPSOPHILA, in botany: A genus of the digynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 22d order, *Caryophyllei*. The calyx is monophyllous, campanulated, and angulated; the petals are five in number, ovate, and ſeſſile; the capſule globoſe and unilocular.

GYPSUM, PLASTER-STONE, or *Alabaſter*; a natural combination of the calcareous earth with vitriolic acid. See ALABASTER.

The properties of gypſum, according to Cronſtedt, are, 1. It is looſer and more friable than a calcareous earth. 2. It does not effervece with acids either in its crude or calcined ſtate; or at moſt but in a very ſlight degree, in proportion to what it wants of the vitriolic acid for the complete ſaturation of its baſe. 3. It falls into powder in the fire very readily. 4. When burnt without being made red-hot, its powder readily concretes with water into a maſs which ſoon hardens; but without any ſenſible heat being excited in the operation. 6. According to our author, it is nearly as difficult of fuſion as limeſtone; and ſhows almoſt the ſame effects upon other bodies with limeſtone, though the acid of vitriol ſeems to promote the vitrification. M. Magellan, however, informs us, that he has found moſt of the gypſeous kind, particularly the fibrous, to melt in the fire pretty eaſily by themſelves. 7. When melted in the fire with borax, it puffs and bubbles very much, and for a long time during the fuſion. According to M. Magellan, when a ſmall quantity of any gypſum is melted together with borax, the glaſs becomes colourleſs and tranſparent; but ſome ſorts of alabaſter and ſparry gypſæ, when melted in quantity with borax, yield a fine yellow tranſparent coloured glaſs, reſembling that of the beſt topazes; but if too much of the gypſum is uſed in proportion to the borax, the glaſs becomes opaque, juſt as it happens with the pure limeſtone. 8. When burnt with any inflammable matter it emits a ſulphureous ſmell, and may thus be decompounded, as well as by either of the fixed alkaline ſalts; but if this laſt method is followed, there ought to be five or ſix times as much ſalt as there is of gypſum. 9. On being decompounded in this manner the reſiduum commonly ſhows ſome ſigns of iron. The ſpecies are,

1. Friable gypſeous earth of a white colour, found in Saxony.

2. Indurated gypſum of a ſolid texture, the particles of which are not viſible, commonly called *alabaſter*. This is ſometimes found unſaturated with vitriolci acid;

in which caſe only it will effervеſce with aquafortis, as it is ſaid to do under the Article Alabaster. It is very eaſily ſawed or cut, and takes a dull poliſh. It is of ſeveral kinds; as, white; clear tranſparent from Perſia, opaque from Italy and Trapans in Sicily; of a yellow colour, of which there are likewiſe two kinds, tranſparent and opaque; the former being met with in the eaſtern countries, the latter in Spain. Brunnick informs us, that in this country there are a great many fine varieties of the ſpecies we treat of; and from hence he ſuppoſes that the ancients obtained the beautiful alabaſters they uſed. Fabroni tells us, that a great variety of fine alabaſters are met with in Italy. Twenty-four quarries of them, each of a different colour, are now worked out at Volterra; but he is of opinion that the Romans brought the greateſt part of the alabaſters they made uſe of from Greece.

3. Gypſum of a ſcaly texture, or common plaſter of Paris. This is found in many different countries, of two kinds; viz. white with coarſe ſcales, or with ſmall ſcales yellowiſh or greyiſh. According to Bergman, plaſter contains $\frac{46}{100}$ of vitriolic acid, $\frac{32}{100}$ of pure calcareous earth, and $\frac{22}{100}$ of water. It is ſoluble in 500 times its weight of warm water, or 450 times its weight of boiling water. It is well known by its property of forming an hard maſs with water after being ſlightly burned; and during this conſolidation a ſlight degree of heat is produced, though leſs than when lime is ſlaked. It is often employed in building; and may be taken off and uſed again and again for the ſame purpoſe.

4. Fibrous gypſum, or plaſter ſtone, has likewiſe two varieties, viz. with coarſe or with fine fibres. It is of a white colour.

5. Selenites, or ſpar-like gypſum, by ſome alſo called *glacies mariæ*, and confounded with the clear and tranſparent mica. It is found of two kinds, clear and tranſparent, or yellowiſh and opaque.

6. Cryſtallized gypſum, or gypſeous druſen. This is found compoſed of wedge-ſhaped and ſometimes of capillary cryſtals, ſometimes white and ſometimes yellowiſh.

7. Stalactitical gypſum is found of a great many different forms and colours. When found in large pieces it commonly varies between white and yellow, and likewiſe in its tranſparency in different parts of the ſame maſs. It is uſed as alabaſter in ſeveral works.

Beſides the countries already mentioned, England abounds with ſubſtances of a gypſeous nature. There are plenty in Derbyſhire and Nottinghamſhire, ſo fine as to be uſed like alabaſter, that is, to take a fine poliſh. In the countries juſt mentioned there are large pits of this kind, alſo in moſt of the cliffs of the Severn, eſpecially at the Old Paſſage in Somerſetſhire. A very fine ſemipellucid ſolid alabaſter is found in Derbyſhire. Very fine fibrous talcs are alſo found in the abovementioned pits of ſtone, and many other places. Selenites every where abound, ſo that it is impoſſible to enumerate the different places. Very fine gypſeous druſen are found in Sheppey Iſle, and ſome exceedingly beautiful, large and clear as cryſtal, have been dug from the ſalt-rocks at Nantwich in Cheſhire. The ſelenites rhomboidales is found in plenty in England, tho' rare in other countries. Shotover hill in Oxfordſhire is remarkable for them. The Iſle of Sheppey affords a kind of ſpar-like gypſum, of a fibrous nature, and always accreting like the radiations of a ſtar on the ſeptaria, and thence called *ſtella ſeptarii*.

The principal uſe of gypſum is as a material for ſmall ſtatues and figures of various kinds, alſo for moulds for caſting wax-works, &c. It has lately been introduced as a manure in France and America, though its ſucceſs in this reſpect has not yet been ſufficiently experienced.

GYR-falco, in zoology, the name of a large and fierce ſpecies of falcon, called in Engliſh the *jer falcon*. See Falco.

It is a very bold and daring bird, attacking all other fowl without reſerve, particularly the heron and ſtork kinds. The other falcons are all afraid of this.

GYRINUS, in zoology; a genus of inſects of the coleoptera order. The generic characters are: The antennæ are cylindrical, ſtiff, and ſhorter than the head; and the eyes are four, two on the upper and two on the under part of the head. Mr Barbut, however, ſays that the eyes only appear on the upper and under parts of the head, but that they are not four. The natator, or common water-flea, is of a bright black colour; the feet are yellow, flat, and large; the inſect is in length one-third of an inch. It runs with great celerity in circles on the ſurface of the waters and is very difficult to catch, plunging down inſtantaneouſly when attempted to be taken. There are eight other ſpecies, which frequent the waters in different parts of the globe.

Plate CCXXII.

GYSHORN, a town of Germany, in the duchy of Lunenburgh, ſituated on the river Aller, in E. Long. 10. 45. N. Lat. 52. 50.

H.

H, The eighth letter and ſixth conſonant in our alphabet; though ſome grammarians will have it to be only an aſpiration, or breathing. But nothing can be more ridiculous than to diſpute its being a diſtinct ſound, and formed in a particular manner by the organs of ſpeech, at leaſt in our language: witneſs the words *eat* and *heat*, *arm* and *harm*, *ear* and *hear*, *at* and *hat*, &c. as pronounced with or without the *h*.

It is pronounced by a ſtrong exſpiration of the breath between the lips, cloſing, as it were, by a gentle motion of the lower jaw to the upper, and the tongue nearly approaching the palate.

There ſeems to be no doubt, but that our *h*, which is the ſame with that of the Romans, derived its figure from that of the Hebrew ח. And indeed, the Phœnicians, the moſt ancient Greeks, and Romans, uſed the ſame figure with our H, which in the ſeries of all theſe alphabets keeps its primitive place, being the eighth letter.

H, uſed as a numeral, denotes 200; and with a daſh over it, H̄, 200,000.

As an abbreviation, H was uſed by the ancients to denote *homo, hæres, hora*, &c. Thus H. B. ſtood for *hæres bonorum;* and H. S. corrupted for LLS. ſeſterce; and H. A. for Hadrianus.

HAAG, or Hag, a town of the duchy of Bavaria in Germany, ſeated on a hill on the weſt ſide of the river Inn, in E. Long. 12. 23. N. Lat. 48. 16.

HABAKKUK, one of the twelve leſſer prophets, whoſe prophecies are taken into the cannon of the Old Teſtament. The name is written in the Hebrew with ח *hheth*; and ſignifies "a wreſtler." There is no preciſe time mentioned in Scripture when this Habakkuk lived; but from his predicting the ruin of the Jews by the Chaldeans, it may be concluded that he propheſied before Zedekiah, or about the time of Manaſſeh. He is reported to have been the author of ſeveral prophecies which are not extant: but thoſe that are indiſputably his, are contained in three chapters. In theſe the prophet complains very pathetically of the diſorders which he obſerved in the kingdom of Judæa. God reveals to him, that he would ſhortly puniſh them in a very terrible manner by the arms of the Chaldeans. He foretels the conqueſts of Nebuchadnezzar, his metamorphoſis, and death. He foretels, that the vaſt deſigns of Jehoiakim would be fruſtrated. He ſpeaks againſt a prince (probably the king of Tyre) who built with blood and iniquity; and he accuſes another king (perhaps the king of Egypt) of having intoxicated his friend, in order to diſcover his nakedneſs. The third chapter is a ſong or prayer to God, whoſe majeſty he deſcribes with the utmoſt grandeur and ſublimity of expreſſion.

HABET, a province of Africa, in Barbary, and in the kingdom of Fez. It is ſurrounded by the Mediterranean, the Straits of Gibraltar, and the Atlantic Ocean. The principal towns are Arzilla, Tetuan, and Ceuta; which laſt is in poſſeſſion of the Spaniards.

HABDALA, a ceremony of the Jews obſerved on the evening of the ſabbath, when every one of the family is come home. At that time they light a taper or lamp, with two wicks at leaſt. The maſter of the family then takes a cup, with ſome wine, mixed with fragrant ſpices, and having repeated a paſſage or two of ſcripture, as for example, "I will take the cup of ſalvation," &c. Pſal. cxvi. and "The Jews had light and gladneſs," &c. Eſth. viii. he bleſſes the wine and ſpices. Afterwards he bleſſes the light of the fire; and then caſts his eyes on his hands and nails, as remembering that he is going to work. The whole is intended to ſignify, that the ſabbath is over, and is from that moment divided from the day of labour which follows. For this reaſon the ceremony is called *Habdala*, which ſignifies "diſtinction." After the ceremony is over, and the company breaks up, they wiſh one another, not "a good night," but "a good week."

HABEAS CORPUS, in law, is the great remedy in caſes of *Falſe Imprisonment*. The incapacity of the three other remedies referred to under that article, to give complete relief in every caſe, hath almoſt entirely antiquated them, and hath cauſed a general recourſe to be had, in behalf of perſons aggrieved by illegal impriſonments to the preſent writ, the moſt celebrated in the Engliſh law. Of this there are various kinds made uſe of by the courts at Weſtminſter, for removing priſoners from one court into another for the more eaſy adminiſtration of juſtice. Such is the *habeas corpus ad reſpondendum,* when a man hath a cauſe of action againſt one who is confined by the proceſs of ſome inferior court; in order to remove the priſoner, and charge him with this new action in the court above. Such is that *ad ſatisfaciendum,* when a priſoner hath had judgment againſt him in an action, and the plaintiff is deſirous to bring him up to ſome ſuperior court to charge him with proceſs of execution. Such alſo are thoſe *ad proſequendum, teſtificandum, deliberandum,* &c.; which iſſue when it is neceſſary to remove a priſoner, in order to proſecute or bear teſtimony in any court, or to be tried in the proper juriſdiction wherein the fact was committed. Such is, laſtly, the common writ *ad faciendum et recipiendum,* which iſſues out of any of the courts of Weſtminſter-hall, when a perſon is ſued in ſome inferior juriſdiction, and is deſirous to remove the action into the ſuperior court; commanding the inferior judges to produce the body of the defendant, together with the day and cauſe of his caption and detainer (whence the writ is frequently denominated an *habeas corpus cum cauſa*), to *do and receive* whatſoever the king's court ſhall conſider in that behalf. This is a writ grantable of common right, without any motion in court; and it inſtantly ſuperſedes all proceedings in the court below. But, in order to prevent the ſurreptitious diſcharge of priſoners, it is ordered by ſtatute 1 & 2 P. & M. c. 13. that no *habeas corpus* ſhall iſſue to remove any priſoner out of any goal, unleſs ſigned by ſome judge of the court of which it is awarded. And, to avoid vexatious delays by removal of frivolous cauſes, it is enacted by ſtatute 21 Jac. I. c. 23. that, where the judge of an inferior court of record is a barriſter of three years ſtanding, no cauſe ſhall be removed from thence by *habeas corpus* or other writ, after iſſue or demurrer deliberately joined: that no cauſe, if once remanded to the inferior court by writ of *procedendo* or otherwiſe, ſhall ever afterwards be again removed: and that no cauſe ſhall be removed at all, if the debt or damages laid in the declaration do not amount to the ſum of five pounds. But an *expedient* having been found out to elude the latter branch of the ſtatute, by procuring a nominal plaintiff to bring another action for five pounds or upwards (and then by the courſe of the court the *habeas corpus* removed both actions together), it is therefore enacted by ſtatute 12 Geo. I. c. 29. that the inferior court may proceed in ſuch actions as are under the value of five pounds, notwithſtanding other actions may be brought againſt the ſame defendant to a greater amount.

But the great and efficacious writ, in all manner of illegal confinement, is that of *habeas corpus ad ſubjiciendum;* directed to the perſon detaining another, and commanding him to produce the body of the priſoner, with the day and cauſe of his caption and detention, *ad faciendum, ſubjiciendum, et recipiendum,* to do, ſubmit to, and receive whatſoever the judge or court awarding ſuch writ ſhall conſider in that behalf. This is a high prerogative writ, and therefore by the common law iſſuing out of the court of king's bench, not only in term time but during the vacation, by a *fiat* from the chief juſtice, or any other of the judges, and running into all parts of the king's dominions; for the king is at all times intitled to have an account why the liberty of any of his ſubjects is reſtrained, wherever that reſtraint may be inflicted. If it iſſues in vacation, it is uſually returnable before the judge himſelf who awarded it, and he proceeds by himſelf thereon; unleſs the term ſhould intervene, and then it may be returned in court. Indeed, if the party were privileged in the courts of common pleas and exchequer, as being an officer or ſuitor of the court, an *habeas corpus ad ſubjiciendum* might alſo have been awarded from thence; and if the cauſe of impriſonment were palpably illegal, they might have diſcharged him: but if he were committed for any criminal matter, they could only have remanded him, or taken bail for his appearance in the court of king's bench; which occaſioned the common pleas to diſcountenance ſuch applications. It alſo hath been ſaid, and by very reſpectable authorities, that the like *habeas corpus* may iſſue out of the court of chancery in vacation: but, upon the famous application to lord Nottingham by Jenks, notwithſtanding the moſt diligent ſearches, no precedent could be found where the chancellor had iſſued ſuch a writ in vacation; and therefore his lordſhip refuſed it.

In the court of king's-bench it was, and is ſtill, neceſſary to apply for it by motion to the court, as in the caſe of all other prerogative writs (*certiorari*; prohibition, *mandamus*, &c.) which do not iſſue as of mere courſe, without ſhowing ſome probable cauſe why the extraordinary power of the crown is called in to the party's aſſiſtance. For, as was argued by lord chief juſtice Vaughan, "it was granted on motion, becauſe it cannot be had of courſe; and there is therefore no *neceſſity* to grant it: for the court ought to be ſatisfied that the party hath a probable cauſe to be delivered." And this ſeems the more reaſonable, becauſe, when once granted, the perſon to whom it is directed can return no ſatisfactory excuſe for not bringing up the body of the priſoner. So that, if it iſſued of mere courſe, without ſhowing to the court or judge ſome reaſonable ground for awarding it, a traitor or felon under ſentence of death, a ſoldier or mariner in the king's ſervice, a wife, a child, a relation, or a domeſtic, confined for inſanity or other prudential reaſons might obtain a temporary enlargement by ſuing out *habeas corpus*, though ſure to be remanded as ſoon as brought up to the court. And therefore Sir Edward Coke, when chief juſtice, did not ſcruple, in 13 Jac. I. to deny a *habeas corpus* to one confined to the court of admiralty for piracy; there appearing, upon his own ſhowing, ſufficient ground to confine him. On the other hand, if a probable ground be ſhown, that the party is impriſoned without juſt cauſe, and therefore hath a right to be delivered, the writ of *habeas corpus* is then a writ of right which may not be denied, but ought to be granted to every man that is committed, or detained in priſon, or otherwiſe reſtrained, though it be by the command of the king, the privy council, or any other."

In the articles Liberty and Rights, we expatiated at large on the perſonal liberty of the ſubject. This was ſhown to be a natural inherent right, which could not be ſurrendered or forfeited unleſs by the commiſſion of ſome great and atrocious crime, and which ought not to be abridged in any cauſe without the ſpecial permiſſion of law. A doctrine coeval with the firſt rudiments of our conſtitution; and handed down to us from the Anglo-Saxons, notwithſtanding all their ſtruggles with the Danes, and the violence of the Norman conqueſt: aſſerted afterwards and confirmed by the conqueror himſelf and his deſcendants: and though ſometimes a little impaired by the ferocity of the times, and the occaſional deſpotiſm of jealous or uſurping princes, yet eſtabliſhed on the firmeſt baſis by the proviſions of *magna charta*, and a long ſucceſſion of ſtatutes enacted under Edward III. To aſſert an abſolute exemption from impriſonment in all caſes, is inconſiſtent with every idea of law and political ſociety; and in the end would deſtroy all civil liberty by rendering its protection impoſſible: but the glory of the Engliſh law conſiſts in clearly defining the times, the cauſes, and the extent, when, wherefore, and to what degree, the impriſonment of the ſubject may be lawful. This it is which induces the abſolute neceſſity of expreſſing upon every commitment the reaſon for which it is made; that the court, upon an *habeas corpus*, may examine into its validity: and according to the circumſtances of the caſe may diſcharge, admit to bail, or remand the priſoner.

And yet, early in the reign of Charles I. the court of king's-bench, relying on ſome arbitrary precedents (and thoſe perhaps miſunderſtood), determined* that they could not upon an *habeas corpus* either bail or deliver a priſoner, though committted without any cauſe aſſigned, in caſe he was commited by the ſpecial command of the king, or by the lords of the privy-council. This drew on a parliamentary inquiry, and produced the *petition of right*, 3 Car. I. which recites this illegal judgment, and enacts that no freeman hereafter ſhall be ſo impriſoned or detained. But when, in the following year, Mr Selden and others were committed by the lords of the council, in purſuance of his majeſty's ſpecial command, under a general charge of "notable contempts and ſtirring up ſedition againſt the king and government," the judges delayed for two terms (including alſo the long vacation) to deliver an opinion how far ſuch a charge was bailable; and when at length they agreed that it was, they however annexed a condition of finding ſureties for the good behaviour, which ſtill protracted their impriſonment; the chief juſtice Sir Nicholas Hyde, at the ſame time declaring †, that "if they were again remanded for that cauſe, perhaps the court would not afterwards grant a *habeas corpus*, being already made acquainted with the cauſe of the impriſonment." But this was heard with indignation and aſtoniſhment by every lawyer preſent; according to Mr Selden's own

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* *State Trials*, viii, 136.

† *Ibid* 240.

own account of the matter, whoſe reſentment was not cooled at the diſtance of four and twenty years.

Theſe pitiful evaſions gave riſe to the ſtatute 16 Car. I. c. 10. §. 8. whereby it is enacted, that if any perſon be committed by the king himſelf in perſon, or by his privy council, or by any of the members thereof, he ſhall have granted unto him, without any delay upon any pretence whatſoever, a writ of *habeas corpus*, upon demand or motion made to the court of king's bench or common-pleas; who ſhall thereupon, within three court-days after the return is made, examine and determine the legality of ſuch commitment, and do what to juſtice ſhall appertain, in delivering, bailing, or remanding ſuch priſoner. Yet ſtill in the caſe of Jenks, before alluded to, who in 1676 was committed by the king in council for a turbulent ſpeech at Guildhall, new ſhifts and devices were made uſe of to prevent his enlargement by law; the chief juſtice, (as well as the chancellor) declining to award a writ of *habeas corpus ad ſubjiciendum* in vacation, though at laſt he thought proper to award the uſual writs *ad deliberandum*, &c. whereby the priſoner was diſcharged at the Old Bailey. Other abuſes had alſo crept into daily practice, which had in ſome meaſure defeated the benefit of this great conſtitutional remedy. The party impriſoning was at liberty to delay his obedience to the firſt writ, and might wait till a ſecond and a third, called an *alias* and a *pluries*, were iſſued, before he produced the party: and many other vexatious ſhifts were practiſed to detain ſtate-priſoners in cuſtody. But whoever will attentively conſider the Engliſh hiſtory, may obſerve, that the flagrant abuſe of any power, by the crown or its miniſters, has always been productive of a ſtruggle: which either diſcovers the exerciſe of that power to be contrary to law, or (if legal) reſtrains it for the future. This was the caſe in the preſent inſtance. The oppreſſion of an obſcure individual gave birth to the famous *habeas corpus* act, 31 Car. II. c. 2. which is frequently conſidered as another *magna charta* of the kingdom; and by conſequence has alſo in ſubſequent times reduced the method of proceeding on theſe writs (though not within the reach of that ſtatute, but iſſuing merely at the common law) to the true ſtandard of law and liberty.

The ſtatute itſelf enacts, 1. That the writ ſhall be returned and the priſoner brought up, within a limited time according to the diſtance, not exceeding in any caſe twenty days. 2. That ſuch writs ſhall be endorſed, as granted in purſuance of this act, and ſigned by the perſon awarding them. 3. That on complaint and requeſt in writing by or on behalf of any perſon committed and charged with any crime (unleſs committed for treaſon or felony expreſſed in the warrant, or for ſuſpicion of the ſame, or as acceſſary thereto before the fact, or convicted or charged in execution by legal proceſs), the lord chancellor, or any of the twelve judges in vacation, upon viewing a copy of the warrant, or affidavit that a copy is denied, ſhall (unleſs the party has neglected for two terms to apply to any court for his enlargement) award a *habeas corpus* for ſuch priſoner, returnable immediately before himſelf or any other of the judges; and upon the return made ſhall diſcharge the party, if bailable, upon giving ſecurity to appear and anſwer to the accuſation in the proper court of judicature. 4. That officers and keepers neglecting to make due returns, or not delivering to the priſoner or his agent within ſix hours after demand a copy of the warrant of commitment, or ſhifting the cuſtody of a priſoner from one to another without ſufficient reaſon or authority (ſpecified in the act), ſhall for the firſt offence forfeit 100l. and for the ſecond offence 200l. to the party grieved, and be diſabled to hold his office. 5. That no perſon, once delivered by *habeas corpus*, ſhall be recommitted for the ſame offence, on penalty of 500l. 6. That every perſon committed for treaſon or felony, ſhall, if he requires it the firſt week of the next term, or the firſt day of the next ſeſſion of *oyer* and *terminer*, be indicted in that term or ſeſſion, or elſe admitted to bail; unleſs the king's witneſſes cannot be produced at that time: and if acquitted, or if not indicted and tried in the ſecond term or ſeſſion, he ſhall be diſcharged from his impriſonment for ſuch imputed offence: but that no perſon, after the aſſizes ſhall be opened for the county in which he is detained, ſhall be removed by *habeas corpus*, till after the aſſizes are ended; but ſhall be left to the juſtice of the judges of aſſiſe. 7. That any ſuch priſoner may move for and obtain his *habeas corpus*, as well out of the chancery or exchequer as out of the king's bench or common pleas; and the lord chancellor or judges denying the ſame, on ſight of the warrant, or oath that the ſame is refuſed, forfeit ſeverally to the party grieved the ſum of 500l. 8. That the writ of *habeas corpus* ſhall run into the counties palatine, cinque ports, and other privileged places, and the iſlands of Jerſey and Guernſey. 9. That no inhabitant of England (except perſons contracting, or convicts praying to be tranſported; or having committed ſome capital offence in the place to which they are ſent) ſhall be ſent priſoner to Scotland, Ireland, Jerſey, Guernſey or any places beyond the ſeas, within or without the king's dominions: on pain that the party committing, his adviſers, aiders, and aſſiſtants, ſhall forfeit to the party grieved a ſum not leſs than 500l. to be recovered with treble coſts; ſhall be diſabled to bear any office of truſt or profit; ſhall incur the penalties of *præmunire*; and ſhall be incapable of the king' pardon.

This is the ſubſtance of that great and important ſtatute: which extends (we may obſerve) only to the caſe of commitments for ſuch criminal charge as can produce no inconvenience to public juſtice by a temporary enlargement of the priſoner; all other caſes of unjuſt impriſonment being left to the *habeas corpus* at common law. But even upon writs at the common law it is now expected by the court, agreeable to ancient precedents and the ſpirit of the act of parliament, that the writ ſhould be immediately obeyed, without waiting for any *alias* or *pluries*; otherwiſe an attachment will iſſue. By which admirable regulations, judicial as well as parliamentary, the remedy is now complete for removing the injury of unjuſt and illegal confinement. A remedy the more neceſſary, becauſe the oppreſſion does not always ariſe from the ill-nature, but ſometimes from the mere inattention, of government. For it frequently happens in foreign countries (and has happened in England during the temporary ſuſpenſions of the ſtatute), that perſons apprehended upon ſuſpicion have ſuffered a long impriſonment, merely becauſe they were forgotten.

HABERDASHER, in commerce, a ſeller of hats and other ſmall wares.—The maſter and wardens of the company of haberdaſhers in London, calling to their aſſiſtance one of the company of cappers, and another of the hat-makers, and mayors, &c. of towns, may ſearch the wares of all hatters who work hats with foreign wool, and who have not been apprentices to the trade, or who dye them with any thing but copperas and galls, or woad and madder: in which caſes they are liable to penalties by ſtat. 8. Eliz. cap 7. and 5 Geo. II. cap. 22.

For the etymology of this denomination, ſee Berdash.

HABERGION, or Haubergeon, Habergetum, a coat of mail; an ancient piece of defenſive armour, in form of a coat, deſcending from the neck to the middle, and formed of little iron rings or maſhes, linked into each other.—The word is alſo written *haberge, hauberge, haubere, haubert, hauther, houtbert*, and *hauberk*. Spelman takes it to have been formed from the ancient French *hault*, "high," and *berg*, "armour, covering;" as ſerving to defend the upper part of the body. Du Cange and Skinner chooſe to derive it from the Belgic *hals*, or Teutonic *haitz*, "neck," and *bergen*, "to cover;" as if it were a peculiar defence for the neck. Others will have it formed of *al, alla*, q. d. *all*, and *bergen*, "to cover;" as importing it a cover for the whole body.

HABAICOT (Nicholas), a celebrated ſurgeon, born at Bonny in Gatinois, acquired great reputation by his ſkill in his profeſſion; and by his writings; and died in 1624. He wrote a treatiſe on the plague, and ſeveral other curious works.

HABINGTON (William), an Engliſh poet and hiſtorian, was the ſon of Thomas Habington, Eſq. He was born in 1605, at Hendlip in Worceſterſhire; and was educated at St Omers and at Paris. He died in 1654, and left ſeveral manuſcripts in the hands of his ſon. His printed works are, 1. Poems under the title of *Caſtura*. 2. The queen of Arragon, a tragi-comedy. 3. Obſervations upon Hiſtory. 4. The hiſtory of Edward IV. king of England, written and publiſhed at the deſire of Charles I. This work is compoſed in a very florid ſtyle.

HABIT, in philoſophy, an aptitude or diſpoſition either of mind or body, acquired by a frequent repetition of the ſame act. See *Custom and Habit*.

Habit is alſo uſed for dreſs or garb, or the compoſition of garments, wherewith a perſon is covered. The principal part of the dreſs worn by the Jews and Greeks was the ἱματιον and the χιτων. The ἱματιον was an upper garment, conſiſting of a looſe ſquare piece of cloath wrapped round the body; the χιτων was an under garment, or tunic, which was faſtened round the body and embraced it cloſely, falling down to the mid-thigh. It is proper in this place to obſerve that a perſon diveſted of this upper garment or ἱματιον, in the eaſtern language, is ſtyled *naked*, and in this ſenſe David danced naked before the ark.

The ſeveral ſorts of garments in uſe with both ſexes, amongſt the Romans, were the toga, tunica, peluna, lacerna, chlamys, paludamentum, læna, ſtola, pallium or palla. See Toga, &c.

For the habits of the prieſts amongſt the Jews, Greeks, and Romans, ſee the article Priests.

Habit is particularly uſed for the uniform garments of the religious, conformable to the rule and order whereof they make profeſſion; as the habit of St Benedict, St Auguſtine, &c.

In this ſenſe we ſay abſolutely, ſuch a perſon has taken the habit; meaning he has entered upon a noviciate in a certain order. So he is ſaid to quit the habit, when he renounces the order. See Vow.

The habits of the ſeveral religious are not ſuppoſed to have been calculated for ſingularity or novelty: the founders of the orders, who were at firſt chiefly inhabitants of deſerts and ſolitudes, gave their monks the habit uſual among the country people. Accordingly, the primitive habits of St Anthony, St Hilarion, St Benedict, &c. are deſcribed by the ancient writers as conſiſting chiefly of ſheep ſkins, the common dreſs of the peaſants, ſhepherds, and mountaineers, of that time; and the ſame they gave to their diſciples.

The orders eſtabliſhed in and about cities and inhabited places took the habit worn by other eccleſiaſtics at the time of their inſtitution. Thus, St Dominic gave his diſciples the habit of regular canons, which he himſelf had always worn to that time. And the like may be ſaid of the Jeſuits, Barnabites, Theatins, Oratorians, &c. who took the common habit of the eccleſiaſtics at the time of their foundation. And what makes them differ ſo much from each other, as well as from the eccleſiaſtical habit of the preſent times, is, that they have always kept invariably to the ſame form; whereas the eccleſiaſtics and laics have been changing their mode on every occaſion.

HABITE *and* Repute, in Scots law, the common opinion of the people; among whom a perſon lives, with reſpect to any circumſtance relating to him.

HABITUDE, among ſchoolmen, the reſpect or relation one thing bears to another. See Relation.

HABSBURGH, or Hapsburg, an ancient caſtle of Swiſſerland, in the canton of Bern. It is the place where the ancient counts of Hapſburg reſided, and is ſeated near the lake of Lucern, and to the eaſt of the town of that name. E. Long. 8. 10. N. Lat. 47. 22.

HACHA, a ſea-port town of South America, in Terra Firma, ſeated at the mouth of a river of the ſame name. Here the Spaniſh galleons touch at their arrival in South America, from whence expreſſes are ſent to all the ſettlements to give them notice of it. W. Long. 72. 8. N. Lat. 11. 30.

HACKET (John), biſhop of Litchfield and Coventry, was born in 1592. In 1623, he was made chaplain to James I. and prebendary of Lincoln: and ſoon after obtained the rectory of St Andrew's Holborn, with that of Cheam in Surry; his patron telling him, he intended Holborn for wealth, and Cheam for health. In 1642 he was preſented to a prebendary and reſidentiary; but was deprived of the enjoyment of them, as well as of St Andrew's, by the enſuing troubles. He then lived retired at Cheam with little diſturbance, until he recovered his preferments by the reſtoration of Charles II. by whom he was preferred to the ſee of Litchfield and Coventry in 1661. Finding the beautiful cathedral of Litchfield almoſt battered to the ground, he in eight years finiſhed a complete church ſuperior to the former, at his own expence of 20,000 l. excepting 1000 l. he had from the dean and chapter, with what he could procure from private benefactors. He laid out 1000 l. on a prebendal houſe, his palaces at Litchfield and Eccleſhall having been demoliſhed during the civil wars: and beſide theſe acts of munificence, left ſeveral other benefactions at his death in 1670. He publiſhed, before he entered into orders, a comedy intitled *Loyola*, which was twice acted before king James I. After his death there appeared a "Century of his ſermons on ſeveral remarkable ſubjects," in folio; and "The life of archbiſhop Williams," in folio, which was abridged in 1700 by Ambroſe Philips.

HACKNEY, a pariſh of Middleſex, on the north-eaſt ſide of London, containing no leſs than 12 hamlets. At the bottom of Hackney-Marſh, through which the river Lea runs, between Old-Ford and the Wyck, there have been diſcovered the remains of a great ſtone cauſeway, which, by the Roman coins, &c. found there, was no doubt one of the famous highways made by the Romans. The church here is of a very ancient foundation, ſo old as Edward II. and the number of houſes near 800. That part next London is called *Mare Street*; the middle *Church Street*; and the north part *Clapton* Dorleſton and Shaklewell are of the weſt, and Hummerton, which leads to the Marſh, on the eaſt. Here are three meeting-houſes and ſeveral boarding-ſchools, beſides the free ſchools in the church-yard, a charity-ſchool, and 17 almſhouſes. It was from this place that the coaches let to the people in London firſt received their name; for in the laſt century, many people having gone on viſits to ſee their friends at Hackney, it occaſioned them often to hire horſes or carriages, ſo that in time it became a common name for ſuch horſes, coaches, and chairs as were let to the people of London; and the name has now diffuſed itſelf not only throughout Britain, but likewiſe Ireland.

Hackney Coaches, thoſe expoſed to hire in the ſtreets of London; and ſome other great cities, at rates fixed by authority. See Coach.—Theſe firſt began to ply in the ſtreets of London, or rather waited at inns, in the year 1625, and were only 20 in number; but in 1635 they were ſo much increaſed, that king Charles iſſued out an order of council for reſtraining them. In 1637, he allowed 50 hackney-coachmen, each of whom might keep 12 horſes. In 1652, their number was limited to 200; and in 1654, it was extended to 300. In 1661, 400 were licenſed, at 5 l. annually for each. In 1694, 700 were allowed, and taxed by the 5 and 6 of W. & M. at 4l. *per annum* each. By 9 Anne cap. 23. 800 coaches were allowed in London and Weſtminiſter; but by 8 Geo. III. cap. 24. the number is increaſed to 1000, which are to be licenſed by commiſſioners, and to pay a duty of 5 ſh. per week to the king. On Sundays there were formerly only 175 hackney-coaches to ply, which were to be appointed by commiſſioners; but their number is now unlimited.

The fare of hackney coachmen in London, or within ten miles of the city, is 12 ſhillings and ſixpence per day, allowing 12 hours per day. By the hour it is 1s. 6d. for the firſt, and 1s. for every hour afterwards; none are obliged to pay above 1s. for any diſtance not exceeding a mile and a half: or above 1s. 6d. for any diſtance not exceeding two miles. Where hackney coachmen refuſe to go at, or exact more than, their limited hire, they are ſubject to a forfeit not under 10s. nor exceeding 3 l. and which the commiſſioners have power to determine. Every hackney-coach muſt be provided with check ſtrings, and every coachman plying without them incurs a penalty of 5s.—Drivers of hackney coaches are to give way to perſons of quality and gentlemens coaches, under the penalty of 5 l.

The duty ariſing from licences to hackney-coaches and chairs in London, forms a branch of the king's extraordinary and perpetual revenue *. This revenue is governed by commiſſioners of its own, and is in truth a benefit to the ſubject; as the expence of it is felt by no individual, and its neceſſary regulations have eſtabliſhed a competent juriſdiction, whereby a very refractory race of men may be kept in ſome tolerable order.

HADDINGTON, a borough-town of Scotland, in Eaſt Lothian, which, alongſt with four others, ſends one member to parliament. It is ſurrounded with many ſeats of nobility and gentry, and is about 16 miles eaſt of Edinburgh. It is the county town, and gives title of Earl to a branch of the Hamilton family. W. Long. 2. 25. N. Lat. 55. 50.

HADDOCK, the Engliſh name of a ſpecies of Gadus.

HADDON (Dr Walter), a great reſtorer of the learned languages in England, was born in 1516. He diſtinguiſhed himſelf particularly by writing Latin in a fine ſtyle, which he acquired by a conſtant ſtudy of Cicero. He was a ſtrenuous promoter of the reformation under king Edward: and was therefore thought a proper perſon to ſucceed biſhop Gardiner in the maſterſhip of Trinity-hall, Cambridge, on his deprivation. He lay concealed during the reign of queen Mary; but acquired the favour of Elizabeth, who conſtituted him one of the maſters of the court of requeſts, and ſent him one of the three agents to Bruges in 1566, to reſtore commerce between England and the Netherlands. He was alſo engaged with Sir John Cheke in drawing up in Latin that uſeful code of eccleſiaſtical law, publiſhed in 1571 by the learned John Fox, under the title of *Reformatio legum eccleſiaſticarum*; his other works are collected and publiſhed under the title of *Lucubrations*. He died in 1572.

HADERSLEBEN, a ſea-port town of Denmark, in the duchy of Sleſwick, with a ſtrong citadel, built upon a ſmall iſland. It is ſeated on a bay of the Baltic Sea, and has a well-frequented harbour. E. Long. 9. 35. N. Lat. 55. 24.

HADES, in the Scriptures is uſed in various ſenſes. Sometimes it ſignifies the inviſible regions of the dead, ſometimes the place of the damned, and ſometimes the grave. In Greek authors it is uſed to ſignify in general the regions of the dead. See Hell.

HADLEY, a town of Suffolk, ſeated in a bottom on the river Preſton. It conſiſts of about 600 houſes; with a very handſome church, a chapel of eaſe, and a Preſbyterian meeting-houſe. The ſtreets are pretty broad, but not paved. Large quantities of yarn are ſpun here for the Norwich manufacture; and this town had once a conſiderable woollen manufacture, which is now decayed. E. Long 1. 0. N. Lat. 52. 7.

HADRIAN. See Adrian.

HÆMAGOGOS, among phyſicians, a compound

* See *Revenue*.

medicine, conſiſting of fetid and aromatic ſimples mixed with black hellebore, and preſcribed in order to promote the menſtrua and hæmorrhoidal fluxes: as alſo to bring away the lochia.

HÆMANTHUS, the BLOOD-FLOWER: a genus of the monogynia order, belonging to the hexandria claſs of plants; and in the natural method ranking under the ninth order, *Spathaceæ*. The involucrum is hexaphyllous and multiflorous; the corolla ſexpartite ſuperior; the berry trilocular.

Species. 1. The coccineus, with plain tongue-ſhaped leaves, riſes about a foot high, with a ſtalk ſupporting a cluſter of bright and tubulous flowers. It hath a large bulbous root, from which in the autumn comes out two broad flat leaves of a fleſhy conſiſtence, ſhaped like a tongue, which turn backward on each ſide, and ſpread on the ground, ſo that they have a ſtrange appearance all the winter. In the ſpring theſe decay; ſo that from May to the beginning of Auguſt they are deſtitute of leaves. The flowers are produced in the autumn juſt before the leaves come out. 2. The carinatus, with keel ſhaped leaves, has a taller ſtalk and paler flowers than the former; its leaves are not flat, but hollowed like the keel of a boat. 3. The puniceus, with large ſpear-ſhaped waved leaves, grows about a foot high, and hath flowers of a yellowiſh red colour. Theſe are ſucceeded by berries, which are of a beautiful red colour when ripe.

Culture. All theſe plants are natives of the Cape of Good Hope, and do not propagate very faſt in Europe, their roots ſeldom putting forth many off-ſets. The beſt method of managing them is to have a bed of good earth in a bricked pit, where they may be covered with glaſſes, and in hard froſts with mats and ſtraw. The earth in the frame ſhould be two feet deep, and the frame ſhould riſe two feet above the ſurface, to allow height for the flower-ſtems to grow. The roots ſhould be planted nine or ten inches aſunder; and in winter, if they are protected from froſt, and not ſuffered to have too much wet, but in mild weather expoſed to the air, they will flower every year, and the flowers will be much ſtronger than with any other management. The third ſort requires to be conſtantly kept in a dry ſtove.

HÆMATITES, or BLOOD STONE, a hard mineral ſubſtance, red, black, or purple, but the powder of which is always red. It is found in maſſes ſometimes ſpherical, ſemi-ſpherical, pyramidal, or cellular, that is like a honeycomb. It contains a large quantity of iron. Forty pounds of this metal have been extracted from a quintal of ſtone; but the iron is of ſuch a bad quality, that this ore is not commonly ſmelted. The great hardneſs of hæmatites renders it fit for furbiſhing and poliſhing metals.

HÆMATOPUS, the SEA-PYE, in ornithology, a genus belonging to the order of grallæ. The beak is compreſſed, with an equal wedge ſhaped point; the noſtrils are linear; and the feet have three toes without nails. There is but one ſpecies, viz. The oſtralegus, or oyſter-catcher, a native of Europe and America. It feeds upon ſhell-fiſh near the ſea-ſhore, particularly oyſters and limpets. On obſerving an oyſter which gapes wide enough for the inſertion of its bill, it thruſts it in, and takes out the inhabitant; it will alſo force the limpets from their adheſion to the rocks with ſufficient eaſe. In turn it feeds on marine inſects and worms. With us theſe birds are often ſeen in conſiderable flocks in winter: in the ſummer they are met with only in pairs, though chiefly in the neighbourhood of the ſea or ſalt rivers. The female lays four or five eggs, on the bare ground, on the ſhore, above high-water mark: they are of a greeniſh grey, blotched with black. The young are ſaid to be hatched in about three weeks. Theſe birds are pretty wild when in flocks; yet are eaſily brought up tame, if taken young.

HÆMATOXYLUM, LOGWOOD, or *Campeachy wood*: a genus of the monogynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 33d order, *Lomentaceæ*. The calyx is quinquepartite; the petals five; the capſule lanceolated; unilocular, and bivalved; the valves navicular or keeled like a boat.

Of this genus there is only one ſpecies, viz. the campechianum, which grows naturally in the bay of Campeachy at Honduras, and other parts of the Spaniſh Weſt-Indies, where it riſes from 16 to 24 feet high. The ſtems are generally crooked, and very deformed; and ſeldom thicker than a man's thigh. The branches, which come out on each ſide, are crooked, irregular, and armed with ſtrong thorns, garniſhed with winged leaves, compoſed of three pair of obſcure lobes indented at the top. The flowers come in a racemus from the wings of the leaves, ſtanding erect, and are of a pale yellowiſh colour, with a purple empalement. They are ſucceeded by flat oblong pods, each containing two or three kidney-ſeeds.—Dr Wright informs us, that this tree was introduced into Jamaica from Honduras in 1715; and is at this time too common, as it has overrun large tracts of land, and is very difficult to root out. It makes a beautiful and ſtrong fence againſt cattle. If pruned from the lower branches, it grows to a ſizeable tree, and, when old, the wood is as good as that from Honduras. The trees are cut up into billets or junks, the bark and white ſap of which are chipped off, and the red part, or heart, is ſent to England for ſale.

Logwood is uſed in great quantities for dyeing purple, but eſpecially black colours. All the colours, however, which can be prepared from it, are of a fading nature, and cannot by any art be made equally durable with thoſe prepared from ſome other materials. Of all the colours prepared from logwood, the black is the moſt durable. Dr Lewis recommends it as an ingredient in making ink. "In dyeing cloth (ſays he), vitriol and galls, in whatever proportions they are uſed, produce only browns of different ſhades: I have often been ſurpriſed that with theſe capital materials of the black dye I never could obtain any true blackneſs in white cloth, and attributed the failure to ſome unheeded miſmanagement in the proceſs, till I found it to be a known fact among the dyers. Logwood is the material which adds blackneſs to the vitriol and gall-brown; and this black dye, though not of the moſt durable kind, is the moſt common. On blue cloth a good black may be dyed by vitriol and galls alone; but even here an addition of logwood contributes not a little to improve the colour."——Mr Delaval, however, in his Eſſay on Colours, informs us, that with an infuſion of galls and iron filings, he not only made up an exceedingly black and durable ink, but alſo dyed linen cloth of a very deep black. See *Colour-Making*, n° 12, 13, 14.; Dyeing, n° 17.; and Ink. Logwood is alſo found to have a conſiderable aſtringent virtue as a medicine, and an extract of it is ſometimes given with great ſucceſs in diarrhœas.

HÆMOPTYSIS, Hæmaptysis, or *Hæmoptöe*; a ſpitting of blood. See (*Index* ſubjoined to) Medicine.

HÆMORRHAGY, (compounded of αιμα "blood," and ρηγνυμι "I burſt forth,)" in medicine, a flux of blood at any part of the body; ariſing either from a rupture of the veſſels, as when they are too full or too much preſſed; or from an eroſion of the ſame, as when the blood is too ſharp and corroſive.—The hæmorrhagy, properly ſpeaking, as underſtood by the Greeks, was only a flux of blood at the noſe; but the moderns extend the name to any kind of flux of blood, whether by the noſe, mouth, lungs, ſtomach, inteſtines, fundament, matrix, or whatever part. See Medicine and Surgery.

HÆMORRHOIDAL, an appellation given by anatomiſts to the arteries and veins going to the inteſtinum rectum.

HÆMORRHOIDS, or Piles, an hæmorrhage or iſſue of blood from the hæmorrhoidal veſſels. See (*Index* ſubjoined to) Medicine.

HÆMUS, (anc. geog.), a vaſt ridge, running from Illyricum towards the Euxine, (Pliny); ſo high as to afford a proſpect both of the Euxine and Adriatic. Here, in after ages, was conſtituted a province called *Hæmimons*, or *Hæmimontus*.

HÆRETICO comburendo, a writ which anciently lay againſt an heretic, who, having once been convicted of hereſy by his biſhop, and having abjured it, afterwards falling into it again, or into ſome other, is thereupon committed to the ſecular power. This writ is thought by ſome to be as ancient as the common law itſelf; however, the conviction of hereſy by the common law was not in a petty eccleſiaſtical court, but before the archbiſhop himſelf in a provincial ſynod, and the delinquent was delivered up to the king to do with him as he pleaſed: ſo that the crown had a control over the ſpiritual power. But by 2 Hen. IV. cap. 15. the dioceſan alone, without the intervention of a ſynod, might convict of heretical tenets; and unleſs the convict abjured his opinions, or if after abjuration he relapſed, the ſheriff was bound *ex officio*, if required by the biſhop, to commit the unhappy victim to the flames, without waiting for the conſent of the crown. This writ remained in force, and was actually executed on two Anabaptiſts in the ſeventh of Elizabeth, and on two Arians in the ninth of James I.—Sir Edward Coke was of opinion, that this writ did not lie in his time; but it is now formally taken away by ſtatute 29 Car. II. cap. 9. But this ſtatute does not extend to take away or abridge the juriſdiction of Proteſtant archbiſhops or biſhops, or any other judges of any eccleſiaſtical courts, in caſes of atheiſm, blaſphemy, hereſy, or ſchiſm, and other damnable doctrines and opinions; but they may prove and puniſh the ſame according to his majeſty's eccleſiaſtial laws, by excommunication, deprivation, degradation, and other eccleſiaſtical cenſures, not extending to death, in ſuch ſort and no other, as they might have done before the making of this act. Sec. 2. See Heresy.

HAERLEM. See Harlen.

HAG, in zoology. See Myxine.

HAGARENS, the deſcendants of Iſhmael. They are called alſo *Iſhmaelites* and *Saracens*; and laſtly, by the general name of *Arabians*.

As to the Hagarens, they dwelt in Arabia the Happy, according to Pliny. Strabo joins them with the Nabathæans, and Chavlotæans, whoſe habitation was rather in Arabia Deſerta. Others think their capital was Petra, otherwiſe Agra, and conſequently they ſhould be placed in Arabia Petræa. The author of the lxxxiii. Pſalm, ver. 6. joins them with the Moabites; and in the Chronicles it is ſaid (1 Chr. v. 10.), that the ſons of Reuben, in the time of Saul, made war againſt the Hagarens, and became maſters of their country eaſtward of the mountains of Gilead. This therefore was the true and ancient country of the Hagarens. When Trajan came into Arabia, he beſieged the Capital of the Hagarens, but could not take it. The ſons of Hagar valued themſelves of old upon their wiſdom as appears by Baruch iii. 23.

HAGEDORN (Frederick de), a celebrated German poet, was born at Hamburgh, where his father was reſident for the king of Denmark, in 1708. He finiſhed his ſtudies at Jena; and, in 1718, publiſhed a number of poetical pieces in Germany, which were well received. He afterwards came to England, where he obtained the friendſhip of many of the learned: and, at his return, was made ſecretary to the Engliſh Hamburgh company, a lucrative employment that left him ſufficient time for cultivating the muſes. In 1738, he publiſhed his Fables and Tales, the firſt collection of the kind of which Germany can boaſt. He afterwards publiſhed other pieces of poetry of different kinds, as Moral Poems, Epigrams, and five books of Songs: which of all his poetical pieces are moſt eſteemed. He died in 1754.

HAGENAU, a town of Germany, and capital of a bailiwick of the ſame name, which was formerly imperial, but now belongs to the French. It was taken by them in 1673; the Imperialiſts retook it in 1702; after which it was ſeveral times taken and retaken by both parties; but at laſt the French got poſſeſſion of it in 1706. It is divided by the river Motter into two parts; and is ſeated near a foreſt of its own name, in E. Long. 7. 53. N. Lat. 48. 49.

HAGGAI, the tenth of the ſmall prophets, was born, in all probability, at Babylon, in the year of the world 3457, from whence he returned with Zerubbabel. It was this prophet who by command from God (Ezra, v. 1, 2, &c.) exhorted the Jews, after their return from the captivity, to finiſh the rebuilding of the temple, which they had intermitted for 14 years. His remonſtrances had their effect; and to encourage them to proceed in the work, he aſſured them from God, that the glory of this latter houſe ſhould be greater than the glory of the former houſe; which was accordingly fulfilled, when Chriſt honoured it with his preſence: for with reſpect to the building, this latter temple was nothing in compariſon of the former.

We know nothing certain of Haggai's death. The Jews pretend, that he died in the laſt year of the reign

Hagiographa, Hague.

reign of Darius, at the ſame time with the prophets Zechariah and Malachi, and that thereupon the ſpirit of prophecy ceaſed among the children of Iſrael. Epiphanius will have it, that he was buried at Jeruſalem among the prieſts. The Greeks keep his feſtival on the 16th of December, and the Latins on the 4th of July.

HAGIOGRAPHA, a name given to part of the books of ſcripture, called by the Jews *Cetuvim*. The word is compounded of αγιος "holy;" and γραφω 'I write." The name is very ancient: St Jerom makes frequent mention of it: before him, St Epiphanius called theſe books ſimply Γραφεια.

The Jews divide the ſacred writings into three claſſes: The Law, which comprehends the five books of Moſes: The Prophets, which they call *Neviim*: And the *Cetuvim* כתובים, called by the Greeks, &c. *Hagiographa*; comprehending the book of Pſalms, Proverbs, Job, Daniel, Ezra, including alſo the book of Nehemiah, Chronicles, Canticles, Ruth, the Lamentations, Eccleſiaſtes, and Eſther.

The Jews ſometimes call theſe books the *Writings*, by way of eminence, as being written by immediate inſpiration of the Holy Spirit. Thus ſays Kimchi, in his preface to the Pſalms, Maimonides in More Nevoch, and Elias Levita in his Thiſbi, under the word כתב.

They diſtinguiſh the hagiographers, however, from the prophets; in that the authors of the former did not receive the matters contained in them by the way called *Prophecy*, which conſiſts in dreams, viſions, whiſpers, ecſtaſies, &c. but by mere inſpiration and direction of the Spirit.

HAGUE, a town of the United Provinces, in Holland, ſituated in E. Long. 4. 10. N. Lat. 48. 49. —In Latin it is called *Haga Comitis*; in French, *La Haye*; in Dutch, *der Haag*, or *'S Graavenhage*, i. e. the Earl's Grove or Wood, from the wood near which it is built, and in which the earls of Holland had a country-houſe. Though it ſends no deputies to the ſtates, it is one of the moſt conſiderable towns in Holland, pleaſantly ſituated, and exceedingly beautiful. It may indeed compare with almoſt any city in Europe, though geographers account it but a village. The inhabitants alſo breathe a better air than thoſe of the other cities, as it ſtands on a dry ſoil, ſomewhat higher than the reſt of the country. It has no gates or walls, but is ſurrounded by a moat over which there are many draw-bridges. Two hours are required to walk round it, and it contains about 40,000 or 50,000 ſouls. It is a place of much ſplendor and buſineſs, being the ſeat of the high colleges of the republic and province of Holland, and the reſidence of the ſtadtholder and foreign ambaſſadors; and there are a great many fine ſtreets and ſquares in it. In the inner court all the high colleges and courts of juſtice hold their aſſemblies: there alſo the foot-guards do duty, as the horſe-guards in the outer, when the ſtates are ſitting. Le Plaats is an open airy place, in form of a triangle, adorned with neat and beautiful buildings: the Vyverberg is an eminence, laid out into ſeveral fine ſhady walks, with the Vyver, a large baſon of water, at the bottom: the Voorhout is the moſt celebrated part of the Hague, and conſiſts of the mall, and three ways for coaches on each ſide, planted with trees, being much the ſame as St Jame's park at London: the palace of Opdam, or Waſſenaar, is built in a very elegant taſte: the prince and princeſs grafts are fine ſtreets: the plan, in Dutch *Het Pleyn*, is a beautiful grove, laid out in ſeveral croſs walks, and ſurrounded with ſtately houſes. The Jewiſh ſynagogue is well worth being ſeen by a curious traveller; and alſo the palaces of the prince of Orange, the hotel of Spain, the new Woorhout, the mauſoleum of the baron of Opdam in the great church, and the ſeveral hoſpitals. The environs of the Hague are exceedingly pleaſant. Among other agreeable objects are the wood, with the palace of Orange at the extremity of it, called the *houſe in the wood*; the village of Scheveling; and the ſand-hills along the north ſea; with the village of Voorburg, and the charming ſeats and fine gardens round it. Two miles from the Hague is Ryſwick, a village: and, a quarter of a mile from that, a noble palace belonging to the prince of Orange, famous for the treaty of peace concluded there in 1697. Looſduynen, where Margaret, counteſs of Henneburg, and daughter of Florence IV. count of Holland and Zealand, is ſaid to have been delivered of 365 children at a birth in 1276, is about five miles from the Hague. Five miles beyond Looſduynen, and not far from the beautiful village of Graveſande, is Honſlardyck, another palace belonging to the prince of Orange, and one of the fineſt ſtructures in the Low Countries.

Hahn | Hai-Tang.

HAHN (Simon Frederick), a celebrated German hiſtorian. At ten years of age he was not only far advanced in the Latin, but underſtood ſeveral living languages. Four years after he pronounced a ſpeech on the origin of the cloyſter at Bergen, the place of his birth, which was printed with ſome other pieces; and in 1708 he publiſhed a Continuation of Meibomius's Chronicle of Bergen. After having for ſeveral years given public lectures at Hall, he became, at the age of 24, profeſſor of hiſtory at Helmſtadt; and was at length counſellor, hiſtoriographer, and librarian, to the king of Great Britain, elector of Hanover. He died in 1729, aged 37.—Beſides the above, and ſome other works, he wrote, 1. The firſt volume of the Hiſtory of the Empire. 2. *Collectio monumentorum veterum et recentium ineditorum*, 2 vols 8vo.

HAI NAN. See HAINAN.

Hai-Tang, a beautiful Chineſe ſhrub, originally brought from the bottom of the rocks which border the ſea-coaſt. It has been cultivated in China for more than 14 centuries; and is celebrated as often in the works of the Chineſe poets, as roſes and lilies are in thoſe of ours. Painters and embroiderers ornament almoſt all their works with its foliage and flowers. The ſtalk of the hai-tang is of a cylindric form, and ſhoots forth a number of branches of a purple tint towards their baſes, and full of knots, which are alſo of a purple colour round the edges. It produces a number of ſhoots, the talleſt of which are about two feet and a half in height. Its leaves (which are much indented, of an oval form towards the ſtalk, pointed at their upper extremities, and full of ſmall prickles) grow almoſt oppoſite one another on the branches, and at the ſame diſtance as the knots. Their colour above is a deep-green; that below is much lighter, and almoſt effaced by their fibres which are large, and of a delicate purple: all theſe leaves together have a beau-

Hai-Tang, Hail.

tiful effect to the eye. The flowers grow in bunches at the extremities of the branches. Each flower is compoſed of four petals, two great and two ſmall, reſembling in colour the bloom of a peach tree, and which have almoſt the ſame figure as the bloſſom of our cherry-trees. The two large are cemented one upon the other, in the form of a purſe; and when they blow, the two ſmall blow alſo in their turn; and then the whole four repreſent a croſs. The piſtil is compoſed of very bright yellow grains, which ſeparate gradually one from another by the lengthening of the filaments to which they adhere; they then open into little bells, and compoſe a ſmall yellow tuft, ſupported by a ſlender ſtalk, which riſes above the petals. The calyx, which ſuſtains each of the flowers, is compoſed of two purple-coloured leaves, united in form of a purſe. In proportion as the flowers grow and increaſe in ſize, the two leaves of the calyx open, become pale and dry, and drop off. The flowers, ſupported by ſmall ſtalks, ſeparate one from the other, and produce of themſelves other flowers, which riſe up from a new calyx.

This plant is propagated from ſeed, but with difficulty. It thrives beſt in a ſandy ſoil; dung or mould deſtroy it; and great care muſt be taken to refreſh it only with the pureſt water. As it cannot endure the ſun in any ſeaſon, it is always planted below walls that are expoſed to the north. It generally begins to flower about the end of Auguſt. After it has produced ſeed, all its branches are cut; and it commonly ſhoots forth new ones before the ſpring following; but it is neceſſary to heap up gravel and pieces of brick round its root, to prevent them from rotting. Notwithſtanding all the care that is taken to cultivate this tree at Peking, it does not thrive ſo well there as in the ſouthern provinces. The ſmell of it leaves has an affinity both to that of the roſe and the violet; but it is weaker, and never extends to any great diſtance.

HAIL, in natural hiſtory, a meteor generally defined frozen rain, but differing from it in that the hailſtones are not formed of ſingle pieces of ice, but of many little ſpherules agglutinated together. Neither are theſe ſpherules all of the ſame conſiſtence; ſome of them being hard and ſolid like perfect ice; others ſoft, and moſtly like ſnow hardened by a ſevere froſt. Sometimes the hailſtone hath a kind of core of this ſoft matter; but more frequently the core is ſolid and hard, while the outſide is formed of a ſofter matter. Hailſtones aſſume various figures, being ſometimes round, at other times pyramidal, crenated, angular, thin, and flat, and ſometimes ſtellated, with ſix radii like the ſmall cryſtals of ſnow.

Natural hiſtorians furniſh us with various accounts of ſurpriſing ſhowers of hail, in which the hailſtones were of extraordinary magnitude. Mezeray, ſpeaking of the war of Louis XII. in Italy in the year 1510, relates, that there was for ſome time an horrible darkneſs, thicker than that of night; after which the clouds broke into thunder and lightning, and there fell a ſhower of hailſtones, or rather (as he calls them) pebble-ſtones, which deſtroyed all the fiſh, birds, and beaſts of the country.—It was attended with a ſtrong ſmell of ſulphur; and the ſtones were of a bluiſh colour, ſome of them weighing an hundred pounds. *Hiſt. de France*, Tom. II. p. 339.

Hail.

At Liſle in Flanders, in 1686, fell hailſtones of a very large ſize; ſome of which contained in the middle a dark brown matter, which thrown on the fire, gave a very great report. Phil. Tranſ. N° 203.

Dr Halley and others alſo relate, that in Cheſhire, Lancaſhire, &c. April 29. 1697, a thick black cloud, coming from Carnarvonſhire, diſpoſed the vapours to congeal in ſuch a manner, that for about the breadth of two miles, which was the limit of the cloud, in its progreſs for the ſpace of 60 miles, it did inconceivable damage; not only killing all ſorts of fowls and other ſmall animals, but ſplitting trees, knocking down horſes and men, and even ploughing up the earth; ſo that the hailſtones buried themſelves under ground an inch or an inch and a half deep. The hailſtones, many of which weighed five ounces, and ſome half a pound, and being five or ſix inches about, were of various figures; ſome round, others half round; ſome ſmooth, others emboſſed and crenated: the icy ſubſtance of them was very tranſparent and hard, but there was a ſnowy kernel in the middle of them.

In Hertfordſhire, May 4. the ſame year, after a ſevere ſtorm of thunder and lightning, a ſhower of hail ſucceeded, which far exceeded the former: ſome perſons were killed by it, their bodies beat all black and blue; vaſt oaks were ſplit, and fields of rye cut down as with a ſcythe. The ſtones meaſured from 10 to 13 or 14 inches about. Their figures were various, ſome oval, others picked, ſome flat. Philoſoph. Tranſ. N° 229.

It is remarkable, that, ſo far as we know, hail is a meteor which never produces any beneficial effect. The rain and dew invigorate and give life to the whole vegetable tribe; the froſt, by expanding the water contained in the earth, pulveriſes and renders the ſoil fertile; ſnow covers and preſerves the tender vegetables from being deſtroyed by too ſevere a froſt. But hail does none of all theſe. In winter, it lies not ſufficiently cloſe to cover vegetables from the nipping froſts; and in ſpring and ſummer it not only has a chilling and blaſting effect from its coldneſs, but often does great damage to the more tender plants by the weight of the ſtones, and in great hail-ſtorms the damage done in this manner is prodigious.

Hail is one of the natural phenomena for which it is almoſt impoſſible to account in any ſatisfactory manner. It is certain, that on the tops of mountains hailſtones, as well as drops of rain, are very ſmall, and continually increaſe in bulk till they reach the lower grounds. It would ſeem, therefore, that during their paſſage through the air, they attract the congealed vapour which increaſes them in ſize. But here we are at a loſs how they come to be ſolid hard bodies, and not always ſoft, and compoſed of many ſmall ſtars like ſnow. The flakes of ſnow, no doubt, increaſe in ſize as they deſcend, as well as the drops of rain or hailſtones; but why ſhould the one be in ſoft cryſtals, and the other in large hard lumps, ſeeing both are produced from congealed vapour? Some modern philoſophers aſcribe the formation of hail to electricity. Signior Beccaria ſuppoſes hail to be formed in the higher regions of the air, where the cold is intenſe, and where the electric matter is very copious. In theſe circumſtances, a great number of particles of water are brought near together, where they are frozen, and in their deſcent collect other particles, ſo that the denſity of the ſubſtance of the hailſtone grows leſs and leſs from the centre; this being formed firſt in the higher regions, and the ſurface being collected in the lower. Agreeable to this, it is obſerved, that in mountains, hailſtones as well as drops of rain are very ſmall, there being but little ſpace through which they can fall and increaſe their bulk. Drops of ran and hail alſo agree in this, that the more intenſe the electricity that forms them, the larger they are. Motion is known to promote freezing, and ſo the rapid motion of the electrified clouds may produce that effect. A more intenſe electricity alſo, he thinks, unites the particles of hail more cloſely than the more moderate electricity does thoſe of ſnow. In like manner we ſee thunder-clouds more denſe than thoſe that merely bring rain; and the drops of rain are larger in proportion, though they fall not from ſo great a height.

HAILING, the ſalutation or accoſting of a ſhip at a diſtance, either at ſea, or in a harbour. The uſual expreſſion is, “Hoa, the ſhip ahoay!” To which ſhe anſwers, “Holloa! Whence came ye? Where are ye bound? Good voyage! What cheer? All well! How fare ye?” &c.

HAILLAN (Bernard de Girard, lord of), a celebrated French hiſtorian. After having made ſome figure in the literary world, and as a tranſlator, he applied himſelf to hiſtory with ſuch ſucceſs, that in 1571, Charles IX. made him hiſtoriographer of France. His hiſtory of France extends from Pharamond to the death of Charles VII. and is the firſt complete hiſtory of that kingdom compoſed in the French tongue. He was honoured by Henry III. with ſeveral marks of favour; and propoſed to continue his hiſtory to the reign of Henry IV. but did not perform his promiſe. He died at Paris in 1610.

HAIMSUCKEN. See HAMESECKEN.

HAINAN, a conſiderable iſland of Aſia, ſituated in between 18° and 20° N. Lat. It is ſubject to China, and belongs to the province of Quang-ton. It has on the north the province of Quang-ſi; on the ſouth the channel formed between the bank Paracel and the eaſtern coaſt of Cochinchina; on the weſt, the ſame kingdom and part of Tong-king; and on the eaſt, the Chineſe ſea. Its extent from eaſt to weſt is between 60 and 70 leagues, and from north to ſouth 45; this iſland therefore is about 160 leagues in circumference. Kiun-tcheou-fou, its capital, ſtands on a promontory, and ſhips often anchor at the bottom of its walls. Two different kinds of mandarins command here, as in all the other provinces of China: the firſt are called *literati*; the ſecond, *mandarins of arms*, or military officers. Its juriſdiction extends over three cities of the ſecond claſs and ten of the third. The greater part of the iſland is under the dominion of the emperor of China; and the reſt is independent, and inhabited by a free people, who have never yet been ſubdued. Compelled to abandon their plains and fields to the Chineſe, they have retreated to the mountains in the centre of the iſland, where they are ſheltered from the inſults of their neighbours.

Theſe people formerly had a free and open correſpondence with the Chineſe. Twice a year they expoſed, in an appointed place, the gold which they dug from their mines, with their eagle-wood and clamba, ſo much eſteemed by the Orientals. A deputy was ſent to the frontiers, to examine the cloths and other commodities of the Chineſe, whoſe principal traders repaired to the place of exchange fixed on; and after the Chineſe wares were delivered, they put into their hands with the greateſt fidelity what they had agreed for. The Chineſe governors made immenſe profits by this barter.

The emperor Kang-hi, informed of the prodigious quantity of gold which paſſed through the hands of the mandarins by this traffic, forbade his ſubjects, under pain of death, to have any communication with theſe iſlanders: however, ſome private emiſſaries of the neighbouring governors ſtill find the means of having intercourſe with them; but what they get at preſent by this clandeſtine trade is little, in compariſon of that which they gained formerly. The natives of this iſland are very deformed, ſmall of ſtature, and of a copper colour: both men and women wear their hair thruſt through a ring on their forehead; and above, they have a ſmall ſtraw-hat, from which hang two ſtrings that are tied under the chin. Their dreſs conſiſts of a piece of black or dark-blue cotton cloth, which reaches from the girdle to their knees: the women have a kind of robe of the ſame ſtuff, and mark their faces from the eyes to the chin with blue ſtripes made with indigo.

Among the animals of this iſland are a curious ſpecies of large black apes, which have the ſhape and features of a man; they are ſaid to be very fond of women: there are alſo found here crows with a white ring round their necks; ſtarlings which have a ſmall creſcent on their bills; a ſpecies like black-birds of a deep blue colour, with yellow ears riſing half an inch; and a multitude of other birds remarkable for their colour or ſong. Beſides mines of gold and lapis lazuli, which enrich the iſland of Hainan, it produces in abundance various kinds of curious and valuable wood. The predeceſſor of the preſent emperor cauſed ſome of it to be tranſported to Peking, at an immenſe expence, to adorn an edifice which he intended for a mauſoleum. The moſt valuable is called by the natives *hoali*, and by the Europeans *roſe* or *violet-wood* from its ſmell; it is very durable, and of a beauty which nothing can equal; it is therefore reſerved for the uſe of the emperor.

Hainan, on account of its ſituation, riches, and extent deſerves to be ranked among the moſt conſiderable iſlands of Aſia. Not far from thence is another ſmall iſland, commonly called *San-cian*. It is celebrated by the death of St Francis Xavier: his tomb is ſtill to be ſeen on a ſmall hill, at the bottom of which is a plain covered on one ſide with wood, and on the other ornamented with ſeveral gardens. This iſland is not a deſert, as ſome travellers have pretended: it contains five villages; the inhabitants of which are poor people, who have nothing to ſubſiſt on but rice and the fiſh which they catch.

HAINAULT, a province of the Netherlands, belonging partly to France and partly to the houſe of Auſtria. It is bounded to the ſouth by Champagne and Picardy; to the north by Flanders; to the eaſt by the duchy of Brabant, the county of Namur, and the biſhopric of Liege; and to the weſt by Artois and

Flanders. Its extent from north to ſouth is about 45 miles, and about 48 from eaſt to weſt. The air is pleaſant and temperate, and the ſoil fruitful: it abounds in rich paſtures, corn-fields, woods, and foreſts, coal, iron, lead, beautiful marble, ſlate, and other uſeful ſtones: it is well watered by rivers and lakes, and breeds abundance of black cattle, and ſheep whoſe wool is very fine. Its principal rivers are the Schelde, the Selle, and the Dender. This province is reckoned to contain 24 walled towns, 950 villages, one duchy, and ſeveral principalities, earldoms, peerdoms, and baronies. The abbeys in it are 27. For ſpiritual matters, the greater part of it is ſubject to the archbiſhop of Cambray, and the reſt to the biſhops of Liege and Arras. The ſtates of the province conſiſt of the clergy, nobility, and commoners. The clergy are the abbots, deputies of the chapters, and rural deans; but the chapters of St Waudru, and St Germain, in Mons, ſend no deputies, as they contribute nothing to the public taxes. The nobility conſiſt of the earls and barons, and all thoſe who by their birth have a right to a ſeat in the aſſembly of the ſtates. The commoners are compoſed of the deputies of the towns. The clergy in this county are uncommonly rich. The ſtates meet only when they are ſummoned by the ſovereign; but there is a ſtanding committee at Mons which meet weekly. This county had counts of its own, till the year 1436; when Philip the Good, duke of Burgundy, arrived to the poſſeſſion of it, upon the death of Jaqueline, the heireſs, without iſſue. The French acquired that part of it which they poſſeſs, part by the peace of the Pyrenees, and partly by thoſe of Nimeguen and Reſwick. The arms of this county are quartered, and contain four lions, in a field *or*. For the government of it, there is a ſovereign council, at the head of which is the high bailiff, who has very great authority; he repreſents the ſovereign, is governor of Mons, and captain-general of the province.

HAIR, ſmall filaments iſſuing out of the pores of the ſkins of animals; and ſerving moſt of them as a tegument or covering *. In lieu of hair, the nakedneſs of ſome animals is covered with feathers, wool, ſcales, &c.

* See *Anatomy*, n° 82.

Hair is found on all parts of the human body, except the ſoles of the feet and the palms of the hands.—But it grows longeſt on the head, chin, breaſt, in the arm-pits, and about the privities.

The ancients held the hair a ſort of excrement, fed only with excrementitious matter, and no proper part of a living body.—They ſuppoſed it generated of the fuliginous parts of the blood, exhaled by the heat of the body to the ſurface, and there condenſed in paſſing through the pores.—Their chief reaſons were, that the hair being cut, will grow again apace, even in extreme old age, and when life is very low: that in hectic and conſumptive people, where the reſt of the body is continually emaciating and attenuating, the hair ſhall thrive: nay, and that it will grow again in dead carcaſes.—They added, that hair does not feed and grow like the other parts, by introſuſception, *i. e.* by a juice circulating within it; but, like the nails, by juxtapoſition, each part next the root, thruſting forward that immediately before it.

But the moderns are agreed, that every hair does properly and truly live, and receive nutriment to fill and diſtend it like the other parts: which they argue hence, that the roots do not turn grey in aged perſons ſooner than the extremities, but the whole changes colour at once, and the like is obſerved in boys, &c.; which ſhows that there is a direct communication, and that all the parts are affected alike.

It may be obſerved, however, that, in propriety, the life and growth of hairs is of a different kind from that of the reſt of the body; and is not immedately derived therefrom, or reciprocated therewith. It is rather of the nature of vegetation. They grow as plants do out of the earth; or as ſome plants ſhoot from the parts of others; from which though they draw their nouriſhment, yet each has, as it were, its ſeveral life and a diſtinct economy. They derive their food from ſome juices in the body, but not from the nutritious juices of the body, whence they may live, tho' the body be ſtarved.—Wulferus, in the *Philoſophical Collections*, gives an account of a woman buried at Norimberg, whoſe grave being opened 43 years after her death, there was hair found iſſuing forth plentifully through the clefts of the coffin; inſomuch that there was reaſon to imagine the coffin had ſome time been covered all over with hair. The cover being removed, the whole corpſe appeared in its perfect ſhape; but, from the crown of the head to the ſole of the foot, covered over with a thick-ſet hair, long and curled. The ſexton going to handle the upper part of the head with his fingers, the whole ſtructure fell at once, leaving nothing in his hand but a handful of hair; there was neither ſkull nor any other bone left; yet the hair was ſolid and ſtrong enough.—Mr Arnold, in the ſame collection, gives a relation of a man hanged for theft, who, in a little time, while he yet hung upon the gallows, had his body ſtrangely covered over with hair.—Some moderns, however, deny the authenticity of theſe and ſimilar inſtances.

The hairs ordinarily appear round or cylindrical; but the microſcope alſo diſcovers triangular and ſquare ones; which diverſity of figure ariſes from that of the pores, to which the hairs always accommodate themſelves. Their length depends on the quantity of the proper humour to feed them, and their colour on the quality of that humour: whence, at different ſtages of life, the colour uſually differs. Their extremities ſplit into two or three branches, eſpecially when kept dry, or ſuffered to grow too long; ſo that what appears only a ſingle hair to the naked eye, ſeems a bruſh to the microſcope.

The hair of a mouſe, viewed by Mr Derham with a microſcope, ſeemed to be one ſingle tranſparent tube, with a pith made up of fibrous ſubſtances, running in dark lines, in ſome hairs tranſverſely, in others ſpirally. The darker medullary parts or lines, he obſerves, were no other than ſmall fibres convolved round, and lying cloſer together than in the other parts of the hair. They run from the bottom to the top of the hair; and he imagines may ſerve to make a gentle evacuation of ſome humour out of the body. Hence the hair of hairy animals, this author ſuggeſts, may not only ſerve as a fence againſt cold, &c. but as an organ of inſenſible perſpiration.

Though the external ſurface of the body is the natural place for hairs, we have many well atteſted inſtances

ſtances of their being found alſo on the internal ſurface. Amatus Luſitanus mentions a perſon who had hair upon his tongue. Pliny and Valerius Maximus concur in their teſtimonies, that the heart of Ariſtomenes the Meſſenian was hairy. Cælius Rhodiginus relates the ſame of Hermogenes the rhetorician; and Plutarch, of Leonidas the Spartan.—Hairs are ſaid to have been frequently found in the breaſts of women, and to have occaſioned the diſtemper called *trichiaſis*; but ſome authors are of opinion, that theſe are ſmall worms and not hairs. There have been, however, various and indiſputable obſervations of hairs found in the kidneys, and voided by urine.

Hippocrates is of opinion, that the glandular parts are the moſt ſubject to hair; but bundles of hair have been found in the muſcular parts of beef, and in ſuch parts of the human body as are equally firm with that. —Hair has been often found in abſceſſes and impoſthumations. Schultetus, opening the abdomen of a woman, found 12 pints of water, and a large lock or bundle of hair ſwimming looſe in it. But of all the internal parts, there is none ſo much ſubject to an unnatural growth of hair as the ovaries of females, and that as well of the human ſpecies as of other animals. Of this Dr Tyſon relates three remarkable inſtances; two of theſe were young women, and the other was a bitch. The animal had been much emaciated in its hinder parts; the hair was about an inch and an half long; but the moſt remarkable particular was, that hair was alſo found lying looſe in the cavities of the veins. We have ſeveral inſtances of mankind being affected in the ſame manner. Cardan relates, that he found hair in the blood of a Spaniard; and Slonatius in that of a gentlewoman of Cracovia; and Shultetus declares from his own obſervation, that thoſe people who are afflicted with the plica polonica, have very often hair in their blood.

Diſeaſes of the HAIR. Almoſt the only diſeaſe of the hair, beſides the remarkable one called *plica polonica*, is its falling off, or *baldneſs* For this many remedies have been recommended, but ſcarce any of them may be depended upon. The juice of burdock, and the lixivial ſalts of vine-aſhes, are ſaid to be efficacious; alſo the powder of hermodactyls, and the decoction of boxwood. A remarkable inſtance of the efficacy of this laſt is given under the article BUXUS.—Some authors give inſtances of the hair changing its colour in a ſhort time, through grief, or by reaſon of a fright, &c.

HAIR *as an Ornament, or as an Enſign of Dignity or of Religion.* By the Jews hair was worn naturally long, juſt as it grew; but the prieſts had theirs cut every fortnight, while they were in waiting at the temple; they made uſe of no razors, however, but ſciſſars only. The Nazarites, while their vow continued, were forbidden to touch their heads with a razor. See NAZARITE.

The falling of the hair, or a change of its colour, was regarded amongſt the Hebrews as a ſign of the leproſy. Black hair was eſteemed by them as the moſt beautiful. Abſalom's hair was cut once a-year, and is ſaid to have weighed 200 ſhekels, by the king's weight, which is about 31 ounces. The law of God hath left no particular ordinances with reſpect to the hair.

The hair of both Jewiſh and Grecian women engaged a principal ſhare of their attention, and the Roman ladies ſeem to have been no leſs curious with reſpect to theirs. They generally wore it long, and dreſſed it in a variety of ways, ornamenting it with gold, ſilver, pearls, &c. On the contrary, the men amongſt the Greeks and Romans, and amongſt the latter Jews, wore their hair ſhort, as may be collected from books, medals, ſtatues, &c. This formed a principal diſtinction in dreſs betwixt the ſexes. This obſervation illuſtrates a paſſage in St Paul's epiſtle to the Corinthians (1 Cor. xi. 14. 15.)

St Paul forbids the Corinthian women, when praying by divine inſpiration, to have their heads diſhevelled; probably becauſe this made them reſemble the heathen prieſteſſes, when actuated by the pretended influence of their gods.

Amongſt the Greeks, both ſexes, a few days before marriage, cut off and conſecrated their hair as an offering to their favourite deities. It was alſo cuſtomary among them to hang the hair of the dead on the doors of their houſes previous to interment. They likewiſe tore, cut off, and ſometimes ſhaved their hair, when mourning for their deceaſed friends or relations, which they laid upon the corpſe or threw into the pile, to be conſumed together with the body. The ancients imagined that no perſon could die till a lock of hair was cut off; and this act they ſuppoſed was performed by the inviſible hand of death, or Iris, or ſome other meſſenger of the gods. This hair, thus cut off, they fancied conſecrated the perſon to the infernal deities, under whoſe juriſdiction the dead were ſuppoſed to be. It was a ſort of firſt fruits which ſanctified the whole. (See *Virg. Æn.* 4. 694.)

Whatever was the faſhion, with reſpect to the hair, in the Grecian ſtates, ſlaves were forbidden to imitate the freemen. The hair of the ſlaves was always cut in a particular manner called θριξ ανδραποδωδης, which they no longer retained after they procured their freedom.

It was eſtimated a notable honour among the ancient Gauls to have long hair, and hence came the appellation *Gallia comata.* For this reaſon Julius Cæſar, upon ſubduing the Gauls, made them cut off their hair as a token of ſubmiſſion.—It was with a view to this, that ſuch as afterwards quitted the world to go and live in cloiſters, procured their hair to be ſhaven off; to ſhow that they bid adieu to all earthly ornaments, and made a vow of perpetual ſubjection to their ſuperiors.

Greg. of Tours aſſures us, that in the royal family of France, it was a long time the peculiar mark and privilege of kings and princes of the blood to wear long hair, artfully dreſſed and curled: every body elſe was obliged to be polled, or cut round, in ſign of inferiority and obedience. Some writers aſſure us, that there were different cuts for all the different qualities and conditions; from the prince, who wore it at full length, to the ſlave or villain who was quite cropt. —To cut off the hair of a ſon of France, under the firſt race of kings, was to declare him excluded from the right of ſucceeding to the crown, and reduced to the condition of a ſubject.

In the eighth century, it was the cuſtom of people of quality to have their childrens hair cut the firſt time by perſons they had a particular honour and eſteem for; who, in virtue of this ceremony, were reputed a ſort of ſpiritual parents or godfathers thereof: Tho' this practice appears to have been more ancient; inaſmuch as we read, That Conſtantine ſent the pope the hair of his ſon Heraclius, as a token that he deſired him to be his adoptive father.

The parade of long hair became ſtill more and more obnoxious in the progreſs of Chriſtianity, as ſomething utterly inconſiſtent with the profeſſion of perſons who bore the croſs. Hence numerous injunctions and canons to the contrary.—Pope Anicetus is commonly ſuppoſed to have been the firſt who forbade the clergy to wear long hair: but the prohibition is of an older ſtanding in the churches of the eaſt; and the letter wherein that decree is written, is of a much later date than that pope.—The clerical tonſure is related by Iſidore Hiſpalenſis, as of apoſtolical inſtitution.

Long hair was anciently held ſo odious, that there is a canon ſtill extant of the year 1096, importing, that ſuch as wore long hair ſhould be excluded coming into church while living, and not to be prayed for when dead. We have a furious declamation of Luitprand againſt the emperor Phocas, for wearing long hair, after the manner of the other emperors of the eaſt, all except Theophilas, who being bald, enjoined all his ſubjects to ſhave their heads.

The French hiſtorians and antiquaries have been very exact in recording the head of hair of their ſeveral kings. Charlemagne wore it very ſhort, his ſon ſhorter; Charles the Bald had none at all. Under Hugh Capet it began to appear again; this the eccleſiaſtics took in dudgeon, and excommunicated all who let their hair grow. Peter Lombard expoſtulated the matter ſo warmly with Charles the Young, that he cut off his hair; and his ſucceſſors for ſome generations wore it very ſhort.—A profeſſor of Utrecht, in 1650, wrote expreſsly on the queſtion, Whether it be lawful for men to wear long hair? and concluded for the negative.—Another divine named Reeves, who had written for the affirmative, replied to him.

The ancient Britons were extremely proud of the length and beauty of their hair, and were at much pains in dreſſing and adorning their heads. Some of them carried their fondneſs for and admiration of their hair to an extravagant height. It is ſaid to have been the laſt and moſt earneſt requeſt of a young warrior, who was taken priſoner and condemned to be beheaded, that no ſlave might be permitted to touch his hair, which was remarkably long and beautiful, and that it might not be ſtained with his blood. We hardly ever meet with the deſcription of a fine woman or beautiful man, in the poems of Oſſian, but the hair is mentioned as one of their greateſt beauties. Not contented with the natural colour of their hair, which was commonly fair or yellow, they made uſe of certain waſhes to render it ſtill brighter. One of theſe waſhes was a compoſition of lime, the aſhes of certain vegetables, and tallow. They made uſe of various arts alſo to make the hair of their heads grow thick and long; which laſt was not only eſteemed a great beauty, but was conſidered as a mark of dignity and noble birth. Boadicea, queen of the Iceni, is deſcribed by Dio with very long hair, flowing over her ſhoulders, and reaching down below the middle of her back. The Britons ſhaved all their beards, except their upper lips; the hair of which they, as well as the Gauls, allowed to grow to a very inconvenient length.

In after-times, the Anglo-Saxons and Danes alſo conſidered fine hair as one of the greateſt beauties and ornaments of their perſons, and were at no little pains in dreſſing it to advantage. Young ladies before marriage wore their hair uncovered and untied, flowing in ringlets over their ſhoulders; but as ſoon as they were married, they cut it ſhorter, tied it up, and put on a head-dreſs of ſome kind or other according to the prevailing faſhion. To have the hair entirely cut off was ſo great a diſgrace, that it was one of the greateſt puniſhments inflicted on thoſe women who were guilty of adultery. The Daniſh ſoldiers who were quartered upon the Engliſh, in the reigns of Edgar the Peaceable and of Ethelred the Unready, were the beaux of thoſe times, and were particularly attentive to the dreſſing of their hair; which they combed at leaſt once every day, and thereby captivated the affections of the Engliſh ladies. The clergy, both ſecular and regular, were obliged to ſhave the crowns of their heads, and keep their hair ſhort, which diſtinguiſhed them from the laity; and ſeveral canons were made againſt their concealing their tonſure, or allowing their hair to grow long. The ſhape of this clerical tonſure was the ſubject of long and violent debates between the Engliſh clergy on the one hand, and thoſe of the Scots and Picts on the other; that of the former being circular, and that of the latter only ſemicircular. It appears very plainly, that long flowing hair was univerſally eſteemed a great ornament; and the tonſure of the clergy was conſidered as an act of mortification, and ſelf-denial, to which many of them ſubmitted with reluctance, and endeavoured to conceal as much as poſſible. Some of them who affected the reputation of ſuperior ſanctity, inveighed with great bitterneſs againſt the long hair of the laity; and laboured earneſtly to perſuade them to cut it ſhort, in imitation of the clergy. Thus the famous St Wulſtan biſhop of Worceſter, is ſaid to have declaimed with great vehemence againſt luxury of all kinds, but chiefly againſt long hair as moſt criminal and moſt univerſal. "The Engliſh (ſays William of Malmſbury in his life of St Wulſtan) were very vicious in their manners, and plunged in luxury through the long peace which they had enjoyed in the reign of Edward the Confeſſor. The holy prelate Wulſtan reproved the wicked of all ranks with great boldneſs; but he rebuked thoſe with the greateſt ſeverity who were proud of their long hair. When any of thoſe vain people bowed their heads before him to receive his bleſſing, before he gave it, he cut a lock of their hair with a little ſharp knife, which he carried about him for that purpoſe; and commanded them, by way of pennance for their ſins, to cut all the reſt of their hair in the ſame manner. If any of them refuſed to comply with this command, he denounced the moſt dreadful judgments upon them, reproached them for their effeminacy, and foretold, that as they imitated women in the length of their hair, they would imitate them in their cowardice, when their country was invaded; which was accompliſhed at the landing of the the Normans."

This continued to be long a topic of declamation among the clergy, who even repreſented it as one of the greateſt crimes, and moſt certain marks of reprobation. Anſelm archbiſhop of Canterbury went ſo far as to pronounce the then terrible ſentence of excommunication, againſt all who wore long hair, for which pious zeal he is very much commended. Serlo a Norman biſhop, acquired great honour by a ſermon which he preached before Henry I. A. D. 1104, againſt long and curled hair, with which the king and all his courtiers were ſo much affected, that they conſented to reſign the flowing ringlets, of which they had been ſo vain. The prudent prelate gave them no time to change their minds, but immediately pulled a pair of ſhears out of his ſleeve, and performed the operation with his own hand. Another incident happened about 25 years after, which gave a temporary check to the prevailing fondneſs for long hair. It is thus related by a contemporary hiſtorian; "An event happpened A. D. 1129, which ſeemed very wonderful to our young gallants: who forgetting that they were men, had transformed themſelves into women by the length of their hair. A certain knight, who was very proud of his long luxuriant hair, dreamed that a perſon ſuffocated him with its curls. As ſoon as he awoke from his ſleep he cut his hair to a decent length. The report of this ſpread over all England and almoſt over all the knights reduced their hair to the proper ſtandard, But this reformation was not of long continuance; for in leſs than a year all who wiſhed to appear faſhionable returned to their former wickedneſs, and contended with the ladies in length of hair. Thoſe to whom nature had denied that ornament ſupplied the defect by art."

The Greeks, and, after their example, the Romans, wore falſe hair.

Commerce of Hair. Hair makes a very conſiderable article in commerce, eſpecially ſince the mode of perukes has obtained. The hair of the growth of the northern countries, as England, &c. is valued much beyond that of the more ſouthern ones, as Italy, Spain, the ſouth parts of France, &c. The merit of good hair conſiſts in its being well fed, and neither too courſe nor too ſlender; the bigneſs rendering it leſs ſuſceptible of the artificial curl, and diſpoſing it rather to frizzle, and the ſmallneſs making its curl of too ſhort duration. Its length ſhould be about 25 inches: the more it falls ſhort of this the leſs value it bears.

There is no certain price for hair: but it is ſold from five ſhillings to five pounds an ounce, according to its quality.

The ſcarceneſs of grey and white hair has put the dealers in that commodity upon the methods of reducing other colours to this. This is done by ſpreading the hair to bleach on the graſs like linen, after firſt waſhing it out in a lixivious water. This lye, with the force of the ſun and air, brings the hair to ſo perfect a whiteneſs, that the moſt experienced perſon may be deceived therein; there being ſcarce any way of detecting the artifice, but by boiling and dyeing it, which leaves the hair of the colour of a dead walnut-tree leaf.

There is alſo a method of dyeing hair with biſmuth, which renders ſuch white hair as borders too much upon the yellow of a bright ſilver colour: boiling is the proof of this too, the biſmuth not being able to ſtand it.

Hair may br changed from a red, grey, or other diſagreeable colour, to a brown or deep black, by a ſolution of ſilver. The liquors ſold under the name of *hair waters*, are at bottom no more than ſolutions of ſilver in aquafortis, largely diluted with water, with the addition perhaps of other ingredients, which contribute nothing to their efficacy. The ſolution ſhould be fully ſaturated with the ſilver, that there may be no more acid in it than is neceſſary for holding the metal diſſolved; and beſides dilution with water, a little ſpirit of wine may be added for the further dulcification of the acid. It muſt be obſerved, that for diluting the ſolution, diſtilled water, or pure rain-water, muſt be uſed; the common ſpring-waters turning it milky, and precipitating a part of the diſſolved ſilver. It is to be obſerved alſo that if the liquor touches the ſkin, it has the ſame effect on it as on the matter to be ſtained, changing the part moiſtened with it to an indelible black.—Hair may be dyed of any colour in the ſame manner as wool. See Dyeing.

Hair which does not curl or buckle naturally is brought to it by art, by firſt boiling and then baking it in the following manner: After having picked and ſorted the hair, and diſpoſed it in parcels according to lengths, they roll them up and tie them tight down upon little cylindrical inſtruments, either of wood or earthen ware, a quarter of on inch thick, and hollowed a little in the middle, called *pipes*; in which ſtate they are put in a pot over the fire, there to boil for about two hours. When taken out, they let them dry; and when dryed, they ſpread them on a ſheet of brown paper, cover them with another, and thus ſend them to the paſtry cook; who making a cruſt or coffin around them of common paſte, ſets them in an oven till the cruſt is about three-fourths baked.

The end by which a hair grew to the head is called the *head of the hair*; and the other, with which they begin to give the buckle, the *point*. Formerly the peruke-makers made no difference between the ends, but curled and wove them by either indifferently; but this made them unable to give a fine buckle; hair woven by the point never taking a right curl. Foreigners own themſelves obliged to the Engliſh for this diſcovery, which was firſt carried abroad by a peruke-maker of that country.

Hair is alſo uſed in various other arts and manufactures.—In particular, the hair of the beavers, hares, conies, &c. is the principal matter whereof hats are made. Spread on the ground, and left to putrefy on cornlands, hair, as all other animal ſubſtances, *viz.* horns, hoofs, blood, garbage, &c. proves good manure.

Hair, in farriery, is generally called the *coat*; and, with regard to horſes, deſerves particular conſideration.

The hair growing on the fetlock ſerves as a defence to the prominent part of it in travelling in ſtoney ways or in froſty weather. If the hair of a horſe's neck, and the parts moſt uncovered, be cloſe, ſmooth, and ſleek, it is an indication of his being in health and good caſe. In order to make the hair of an horſe ſoft and ſleek, he muſt be kept warm at heart, for the leaſt inward cold will cauſe the hair to ſtare; alſo ſweat him often, for that will looſen and raiſe the duſt and filth that renders his coat fowl; and when he is in the heat of a ſweat, ſcrape off all the white foam, ſweat, and filth, that is raiſed up with an old ſword-blade: and alſo when he is blooded, if you rub him all over with his own blood, repeating it two or three days, and curry and dreſs him well, it will make his coat ſhine as if covered with a fine varniſh.

Hair falling from the mane or tail is cauſed either by his having taken ſome heat, which has engendered a dry mange; or from ſome ſurfeit, which cauſes the evil humours to reſort to thoſe parts. To cure this, anoint the horſe's mane and creſt with black ſoap; make a ſtrong lee of aſhes, and waſh it all over with it. But if a canker ſhould grow on a horſe's tail, which will eat away both fleſh and bone; then put ſome oil of vitriol to it, and it will conſume it; and if you find that the vitriol corrodes too much, you need only to wet it with cold water, and it will put a ſtop to it.

If you would take away hair from any part of a horſe's body, boil half a pound of lime in a quart of water, till one fourth part is conſumed, to which add an ounce of orpiment; make this into a plaſter, and lay it on.

HAIR, or *Down*, of plants; a general term expreſſive of all the hairy and glandular appearances on the ſurface of plants, to which they are ſuppoſed by naturaliſts to ſerve the double purpoſe of defenſive weapons and veſſels of ſecretion.

Theſe hairs are minute threads of greater or leſs length and ſolidity; ſome of them viſible to the naked eye; whilſt others are rendered viſible only by the help of glaſſes. Examined by a microſcope, almoſt all the parts of plants, particularly the young ſtalks or ſtems, appear covered with hairs.

Hairs on the ſurface of plants preſent themſelves under various forms; in the leguminous plants they are generally cylindric; in the mallow tribe, terminated in a point; in agrimony, ſhaped like fiſh-hook; in nettle, awl-ſhaped and jointed; and in ſome compound flowers with hollow or funnel-ſhaped florets, they are terminated in two crooked points.

Probable as ſome experiments have rendered it, that the hairs on the ſurface of plants contribute to ſome organical ſecretion, their principal uſe ſeems to be to preſerve the parts in which they are lodged from the bad effects of violent frictions, from winds, from extremes of heat and cold, and ſuch like external injuries.

M. Guettard, who has eſtabliſhed a botanical method from the form, ſituation, and other circumſtances of the hairy and glandular appearances on the ſurface of plants, has demonſtrated, that theſe appearances are generally conſtant and uniform in all the plants of the ſame genus. The ſame uniformity ſeems to characteriſe all the different genera of the ſame natural order.

The different ſorts of hairs which form the down upon the ſurface of plants were imperfectly diſtinguiſhed by Grew in 1682, and by Malpighi in 1686. M. Guettard juſt mentioned was the firſt who examined the ſubject both as a botaniſt and a philoſopher. His obſervations were publiſhed in 1747.

HAIR-Cloth, in military affairs, are large pieces of cloth made with half hair. They are uſed for covering the powder in waggons, or upon batteries; as alſo for covering charged bombs or hand-grenades, and many other uſes in magazines.

HAIR-Powder. See STARCH.

HAIR-Worm. See GORDIUS.

HAKE, in ichthyology, the Engliſh name of a fiſh common in the Engliſh and ſome other ſeas, and called by authors the *merlucius* and *lucius marinus*. This fiſh was uſed of old dried and ſalted. Hence the proverb obtains in Kent, *As dry as a hake*.

HAKLUYT (Richard), a naval hiſtorian, is ſuppoſed to have been born in London, about the year 1553, and deſcended of a genteel family in Herefordſhire, as the name frequently occurs in the liſt of high ſheriffs for that county in former reigns. He was educated at Weſtminſter-ſchool; and thence, in 1570, removed to Chriſt-church, Oxford; where he applied himſelf particularly to the ſtudy of coſmography, and read public lectures in that ſcience. Sir Edward Stafford being ſent ambaſſador to France in 1585, Mr Hakluyt was one of his attendants, probably in the capacity of chaplain. He was at this time maſter of arts and profeſſor of divinity. In 1585 he obtained the royal mandate for the next vacant prebend of Briſtol to which preferment he ſucceeded during his reſidence at Paris. Conſtantly attentive to his favourite coſmographical inquiries, in ſearching the French libraries, he found a valuable hiſtory of Florida, which had been diſcovered about 20 years before by Captain Loudonniere and others: this he cauſed to be publiſhed at his own expence, in the French language, and ſoon after reviſed and republiſhed Peter Martyr's book *De orbe Novo*. After five years reſidence in France, Mr Hakluyt returned to England in company with lady Sheffield, ſiſter to the lord admiral Howard. In the year 1589 he publiſhed his collection of Voyages in one folio volume, which in 1598 was republiſhed in three. In 1605 our author was made prebendary of Weſtminſter; which, with the Rectory of Wetheringſet in the county of Suffolk, ſeems to have been the ſummit of his preferment. He died in 1616, and was buried in Weſtminſter-abbey; bequeathing to his ſon Edmund his manor of Bridge-Place, and ſeveral houſes in Tothil-ſtreet, Weſtminſter. He was an indefatigable and faithful hiſtorian. His works are, 1. A Collection of Voyages and Diſcoveries, a ſmall volume. 2. Hiſtory of Florida, abovementioned. 3. The principal Navigations, Voyages, and Diſcoveries of the Engliſh Nation, made by Sea or over Land to the fartheſt diſtant Quarters of the Earth, at any time within the compaſs of theſe 1500 years, in three vols folio. 4. The Diſcoveries of the World, from the firſt Original to the Year 1555, written in the Portugal tongue by Ant. Galvano; corrected, much amended, and tranſlated into Engliſh, by Richard Hakluyt. 5. Virginia richly valued, by the Deſcription of the Main Land of Florida, her next neighbour, &c. written by a Portugal gentleman of Elvas, and tranſlated by Richard Hakluyt. Beſides theſe, he left ſeveral manuſcripts, which were printed in Purchas's collection.

HALBERSTADT, a ſmall principality of Germany, bounded on the north-eaſt by the duchy of Magdeburg, on the ſouth by the principality of Anhalt, on the weſt by the dioceſe of Hildſheim, on the eaſt by part of the electorate of Saxony, and on the north by Brunſwic Wolfenbuttle. It is near 40 miles in length and 30 in breadth. The ſoil in general is fertile in corn and flax; and there are ſome woods, though in general fuel is ſcarce. There are three large towns in it which ſend repreſentatives to the diet, together with 10 ſmall ones, and 91 country-towns and villages. The number of the inhabitants is computed at about 200,000; the greateſt part of them are Lutherans; but there are alſo Calviniſts, Jews, and Roman Catholics. The manufactures are chiefly woollen (for the country produces a great number of ſheep); the exports are grain, and a kind of beer called *broihan*. The annual revenue ariſing from this principality, and the incorporated counties and lordſhips, is ſaid to amount to 500,000 rix-dollars. Till the treaty of Weſtphalia in 1648 this country was a dioceſe, but was then transferred to the electoral houſe of Brandenburg as a temporal principality. It is intitled to a vote both in the diet of the empire and that of the circle. The principal places are Halberſtadt, Groningen, Oſcherſleben, Oſterwick, &c.

HALBERSTADT, a city of Germany, in the circle of Lower Saxony, ſituated near the river Hothein. It is a neat uniform place; and has ſome good churches and other handſome buildings, of which the cathedral is the chief. There is an inn in this place, which is looked upon to be the largeſt and to have the beſt accommodations of any in Europe. Before the Reformation, it was a biſhop's ſee. E. Long. 11. 29. N. Lat. 52. 6.

HALBERT, or HALBARD, in the art of war, a well-known weapon carried by the ſerjeants of foot and dragoons. It is a ſort of ſpear, the ſhaft of which is about five feet long, and made of aſh or other wood. Its head is armed with a ſteel point, not unlike the point of a two-edged ſword. But beſides this ſharp point which is in a line with the ſhaft, there is a croſs piece of ſteel, flat and pointed at both ends; but generally with a cutting edge at one extremity, and a bent ſharp point at the other; ſo that it ſerves equally to cut down or to puſh withal. It is alſo uſeful in determining the ground between the ranks, and adjuſting the files of a battalion. The word is formed of the German *hal*, "hall," and *bard*, "an hatchet." Voſſius derives it from the German *hallebaert*, of *hel*, "clarus, ſplendens," and *baert*, "ax."

The halbert was anciently a common weapon in the army, where there were companies of halbardiers. It is ſaid to have been uſed by the Amazons, and afterwards by the Rhætians and Vindelicians about the year 570.

It was called the *Daniſh ax*, becauſe the Danes bore an halbert on the left ſhoulder. From the Danes it was derived to the Scots, from the Scots to the Engliſh Saxons, and from them to the French.

HALCYON, in ornithology, a name given by the ancients to the alcedo or king's fiſher. See ALCEDO.

HALCYON Days, in antiquity, a name given to ſeven days before and as many after the winter ſolſtice; by reaſon the halcyon, invited by the calmneſs of the weather, laid its eggs in neſts built in the rocks, cloſe by the brink of the ſea, at this ſeaſon.

HALDE (John Baptiſt du), a learned French Jeſuit, born at Paris in 1674. He was extremely well verſed in Aſiatic geography: and we have of his compilation a work intitled *Grand Deſcription de la Chine & de la Tartarie*, from original memoirs of the Jeſuitical miſſionaries, in 4 vols folio. He was alſo concerned in a collection of letters begun by father Gobien, called *Des lettres edifiantes*, in 18 vols; and publiſhed ſome Latin poems and orations. He died in 1743.

HALE, in the ſea language, ſignifies *pull*; as, to hale up, is to pull up; to hale in or out, is to pull in or out. To over-hale a rope, is to hale it too ſtiff, or to hale in the contrary way.

Keel-HALE. See DUCKING.

HALE (Sir Matthew), lord chief juſtice of the king's-bench in the reign of Charles II. was the ſon of Robert Hale, Eſq; a barriſter of Lincoln's Inn, and was born in 1609. He was educated at Oxford, where he made a conſiderable progreſs in learning; but was afterwards diverted from his ſtudies by the levities of youth. From theſe he was reformed by Mr John Glanvill, ſerjeant at law; and applying to the ſtudy of the law, entered into Lincoln's Inn. Noy the attorney-general took early notice of him, and directed him in his ſtudies. Mr Selden alſo took much notice of him; and it was this acquaintance that firſt ſet Mr. Hale on a more enlarged purſuit of learning, which he had before confined to his own profeſſion. During the civil wars, he behaved ſo well as to gain the eſteem of both parties. He was employed in his practice by all the king's party; and was appointed by the parliament one of the commiſſioners to treat with the king. The murder of king Charles gave him very ſenſible regret. However, he took the engagement; and was appointed, with ſeveral others, to conſider of the reformation of the law. In 1653 he was by writ made ſerjeant at law, and ſoon after appointed one of the juſtices of the Common Pleas. Upon the death of Oliver Cromwell he refuſed to accept of the new commiſſion offered him by Richard his ſucceſſor. He was returned one of the knights of Glouceſterſhire in the parliament which called home Charles II. Soon after he was made lord chief baron of the exchequer; but declined the honour of knighthood, till lord chancellor Hyde, ſending for him upon buſineſs when the king was at his houſe, told his majeſty, that "there was his modeſt chief baron;" upon which he was unexpectedly knighted. He was one of the principal judges that ſat in Clifford's Inn about ſettling the difference between landlord and tenant, after the fire of London, in which he behaved to the ſatisfaction of all parties concerned, and alſo in his poſt of chief baron acted with inflexible integrity. One of the firſt peers went once to his chamber, and told him, "That having a ſuit in law to be tried before him, he was then to acquaint him with it, that he might the better underſtand it when it ſhould come to be tried in court." Upon which the lord chief baron interrupted him, and ſaid, "He did not deal fairly to come to his chambers about ſuch affairs; for he never received information of ſuch cauſes but in open court, where both parties were to be heard alike." Upon which his grace (for he was a duke) went away not a little diſſatisfied, and complained of it to the king as a rudeneſs that was not to be endured: but his majeſty bid him content himſelf that he was uſed no worſe; and ſaid, "That he verily believed he would have uſed him no better if he had gone to ſolicit him in any of his own cauſes." Another remarkable incident happened in one of his circuits. A gentleman who had a trial at the aſſizes had ſent him a buck for his table. When judge Hale therefore heard his name, he aſked "if he was not the ſame perſon who had ſent him the veniſon?" and finding that he was the ſame, told him, that "he could not ſuffer the trial to go on till he had paid him for his buck." The gentleman anſwered, that "he never ſold his veniſon; and that he had done nothing to him which he did not do to every judge who had gone that circuit:" which was confirmed by ſeveral gentlemen preſent. The lord chief baron, however, would not ſuffer the trial to proceed till he had paid for the preſent: upon which the gentleman withdrew the record. In ſhort, he was in 1671 advanced to be lord chief juſtice of the king's bench; but about four years after this promotion, his health declining, he reſigned his poſt in February 1675-6, and died in December following. This excellent man, who was an ornament to the bench, to his country, and to human nature, wrote, 1. An Eſſay on the Gravitation and Non-gravitation of Fluid Bodies. 2. Obſervations touching the Torricellian Experiment. 3. Contemplations, moral and divine. 4. The Life of Pomponius Atticus, with political and moral Reflections. 5. Obſervations on the Principles of Natural Motion. 6. The primitive Origination of Mankind. He alſo left a great number of manuſcripts in Latin and Engliſh, upon various ſubjects; among which are his pleas of the Crown, ſince publiſhed by Mr Emyln in two volumes folio; and his Original Inſtitution, Power, and Juriſdiction of Parliaments.

Hales (Stephen), D. D. a celebrated divine and philoſopher, was born in 1677. He was the ſixth ſon of Thomas Hales, Eſq; the eldeſt ſon of Sir Robert Hales, created a baronet by king Charles II. and Mary the heireſs of Richard Langley of Abbots-Wood in Hertfordſhire. In 1696 he was entered a penſioner at Bennet-college, Cambridge; and was admitted a fellow in 1703, and became bachelor of divinity in 1711. He ſoon diſcovered a genius for natural philoſophy. Botany was his firſt ſtudy; and he uſed frequently to make excurſions among Gogmagog hills, in company with Dr Stukely, with a view of proſecuting that ſtudy. In theſe expeditions he likewiſe collected foſſils and inſects, having contrived a curious inſtrument for catching ſuch of the latter as have wings. In company with this friend he alſo applied himſelf to the ſtudy of anatomy, and invented a curious method of obtaining a repreſentation of the lungs in lead. They next applied themſelves to the ſtudy of chemiſtry; in which, however, they did not make any remarkable diſcoveries. In the ſtudy of aſtronomy Mr Hales was equally aſſiduous. Having made himſelf acquainted with the Newtonian ſyſtem, he contrived a machine for ſhowing the phenomena on much the ſame principles with that afterwards made by Mr Rowley, and, from the name of his patron, called an *Orrery*.

About the year 1710 he was preſented to the perpetual cure of Teddington near Twickenham, in Middleſex; and afterwards accepted of the living of Porlock in Somerſetſhire, which vacated his fellowſhip in the college, and which he exchanged for the living of Faringdon in Hampſhire. Soon after, he married Mary, the daughter and heireſs of Dr Newce, who was rector of Haliſham in Suſſex, but reſided at Much-Haddam, in Hertfordſhire. On the 13th of March 1718, he was elected member of the Royal Society; and on the 5th of March, in the year following, he exhibited an account of ſome experiments he had lately made on the effect of the ſun's warmth in raiſing the ſap in trees. This procured him the thanks of the ſociety, who alſo requeſted him to proſecute the ſubject. With this requeſt he complied with great pleaſure; and on the 14th of June 1725 exhibited a treatiſe in which he gave an account of his progreſs. This treatiſe being highly applauded by the ſociety, he farther enlarged and improved it; and in April 1727 he publiſhed it under the title of *Vegetable Statics*. This work he dedicated to his late majeſty king George II. who was then prince of Wales; and he was the ſame year choſen one of the council of the Royal Society, Sir Hans Sloane being at the ſame annual election choſen their preſident. The book being well received, a ſecond edition of it was publiſhed in 1731. In a preface to this edition Mr Hales promiſed a ſequel to the work, which he publiſhed in 1733 under the title of *Statical Eſſays*, &c. In 1732 he was appointed one of the truſtees for eſtabliſhing a new colony in Georgia. On the 5th of July 1733 the Univerſity of Oxford honoured him with a diploma for the degree of doctor of divinity; a mark of diſtinction the more honourable, as it is not uſual for one univerſity to confer academical honours on thoſe who were educated at another. In 1734, when the health and morals of the lower and middling claſs of people were ſubverted by the exceſſive drinking of gin, he publiſhed, though without his name, A friendly Admonition to the Drinkers of Brandy and other Spirituous Liquors; which was twice reprinted. The latter end of the ſame year he publiſhed a ſermon which he preached at St Bride's before the reſt of the truſtees for eſtabliſhing a new colony in Georgia. His text was, "Bear ye one another's burdens, and ſo fulfil the law of Chriſt;" Galatians vi. 2. In 1739 he printed a volume in 8vo, intitled, Philoſophical Experiments on Sea-water, Corn, Fleſh, and other ſubſtances. This work, which contained many uſeful inſtructions for voyagers, was dedicated to the lords of the admiralty. The ſame year he exhibited to the Royal Society an account of ſome farther experiments towards the diſcovery of medicines for diſſolving the ſtone in the kidneys and bladder, and preſerving meat in long voyages; for which he received the gold medal of Sir Godfrey Copley's donation. The year following he publiſhed ſome account of Experiments and Obſervations on Mr Stephens's Medicines for diſſolving the Stone, on which their diſſolvent power is inquired into and demonſtrated.

In 1741 he read before the Royal Society an account of an inſtrument which he invented, and called a *ventilator*, for conveying freſh air into mines, hoſpitals, priſons, and the cloſe parts of ſhips: he had communicated it to his particular friends ſome months before; and it is very remarkable, that a machine of the ſame kind, for the ſame purpoſe, was in the ſpring of the ſame year invented by one Martin Triewald, an officer in the ſervice of the king of Sweden, called *captain of mechanics*, for which the king and ſenate granted him a privilege in October following, and ordered every ſhip of war in the ſervice of that ſtate to be furniſhed with one of them; a model alſo of this machine was ſent into France, and all the ſhips in the French navy were alſo ordered to have a ventilator of the ſame ſort. It happened alſo, that about the ſame time one Sutton, who kept a coffee-houſe in Alderſgateſtreet, invented a ventilator of another conſtruction to draw off the foul air out of ſhips by means of the cook-room fire: but poor Sutton had not intereſt enough to make mankind accept the benefit he offered them; tho' its ſuperiority to Dr Hales's contrivance was evident, and among others, Dr Mead and the late ingenious Mr Benjamin Robins gave their teſtimony in its favour: (See *Air-Pipes.*) The public, however, is not leſs indebted to the ingenuity and benevolence of Dr Hales, whoſe ventilators came more eaſily into uſe for many purpoſes of the greateſt importance to life, particularly for keeping corn ſweet, by blowing through it freſh ſhowers of air; a practice very ſoon adopted by France, a large granary having been made, under the direction of Duhamel, for the preſervation of corn in this manner, with a view to make it a general practice.

In 1743, Dr Hales read before the Royal Society a deſcription of a method of conveying liquors into the *abdomen* during the operation of tapping, and it was afterwards printed in their Tranſactions. In 1745, he publiſhed ſome experiments and obſervations on tar-water, which he had been induced to make by the publication of a work called *Siris,* in which the late learned and moſt excellent Dr Berkley, biſhop of Cloyne, had recommended tar-water as an univerſal medicine: on this occaſion ſeveral letters paſſed between them on the ſubject, particularly with reſpect to the uſe of tar-water in the diſeaſe of the horned cattle. In the ſame year he communicated to the public, by a letter to the editor of the Gentleman's Magazine, a deſcription of a *back-heaver,* which will winnow and clean corn much ſooner and better than can be done by the common method. He alſo, at the ſame time, and by the ſame channel, communicated to the public a cheap and eaſy way to preſerve corn ſweet in ſacks; an invention of great benefit to farmers, eſpecially to poor leaſers, who want to keep ſmall quantities of corn for ſome time, but have no proper granary or repoſitory for that purpoſe. He alſo the ſame year took the ſame method to publiſh directions how to keep corn ſweet in heaps without turning it, and to ſweeten it when muſty. He publiſhed a long paper, containing an account of ſeveral methods to preſerve corn by ventilators; with a particular deſcription of ſeveral ſorts of ventilators, illuſtrated by a cut, ſo that the whole mechaniſm of them may be eaſily known, and the machine conſtructed by a common carpenter. He publiſhed alſo in the ſame volume, but without his name, a detection of the fallacious boaſts concerning the efficacy of the liquid ſhell in diſſolving the ſtone in the bladder. In 1746 he communicated to the Royal Society a propoſal for bringing ſmall paſſable ſtones ſoon, and with eaſe, out of the bladder; and this was alſo printed in their Tranſactions. In the Gentleman's Magazine for July 1747, he publiſhed an account of a very conſiderable improvement of his back-heaver, by which it became capable of clearing corn of the very ſmall grain, ſeeds, blacks, ſmut-balls, &c. to ſuch perfection as to make it fit for ſeed-corn. In 1748 he communicated to the Royal Society a propoſal for checking, in ſome degree, the progreſs of fires, occaſioned by the great fire which happened that year in Cornhill: And the ſubſtance of this propoſal was printed in their Tranſactions. In the ſame year he alſo communicated to the Society two memoirs, which are printed in their Tranſactions; one on the great benefit of ventilators, and the other on ſome experiments in electricity. In 1749 his ventilators were fixed in the Savoy priſon, by order of the right hon. Henry Fox, Eſq; then ſecretary at war, afterwards lord Holland; and the benefit was ſo great, that though 50 or 100 in a year often died of the jaol-diſtemper before, yet from the year 1749 to the year 1752 incluſive, no more than four perſons died, though in the year 1750 the number of priſoners was 240; and of thoſe four, one died of the ſmall-pox, and another of intemperance. In the year 1750 he publiſhed ſome conſiderations on the cauſes of earthquakes; occaſioned by the ſlight ſhocks felt that year in London. The ſubſtance of this work was alſo printed in the Philoſophical Tranſactions. The ſame year he exhibited an examination of the ſtrength of ſeveral purging waters, eſpecially of the water of *Jeſſop's well,* which is printed in the Philoſophical Tranſactions.

Dr Hales had now been ſeveral years honoured with the eſteem and friendſhip of his royal highneſs Frederick prince of Wales; who frequently viſited him at Teddington, from his neighbouring palace at Kew, and took a pleaſure in ſurpriſing him in the midſt of thoſe curious reſearches into the various parts of nature which almoſt inceſſantly employed him. Upon the prince's death, which happened this year, and the ſettlement of the houſehold of the princeſs-dowager, he was, without his ſolicitation, or even knowledge, appointed clerk of the cloſet or almoner to her royal highneſs. In 1751 he was choſen by the college of phyſicians to preach the annuual ſermon called *Crowne's lecture*: Dr William Crowne having left a legacy for a ſermon to be annually preached on "the wiſdom and goodneſs of God diſplayed in the formation of man." Dr Hales's text was, *With the ancient is wiſdom, and in length of days underſtanding,* Job xii. 12. This ſermon, as uſual, was publiſhed at the requeſt of the college. In the latter end of the year 1752, his ventilators, worked by a windmill, were fixed in Newgate, with branching trunks to 24 wards; and it appeared that the diſproportion of thoſe that died in the gaol before and after this eſtabliſhment was as 16 to 7. He publiſhed alſo a farther account of their ſucceſs, and ſome obſervations on the great danger ariſing from foul air, exemplified by a narrative of ſeveral perſons ſeized with the gaol-fever by working in Newgate.

On the death of Hans Sloane, which happened in the year 1753, Dr Hales was elected a member of the Academy of Sciences at Paris in his room. The ſame year the publiſhed in the Gentleman's Magazine ſome farther conſiderations about means to draw the foul air out of the ſick rooms of occaſional army-hoſpitals, and private houſes in town. He alſo publiſhed many other curious particulars relative to the uſe and ſucceſs of ventilators. The ſame year a deſcription of a ſea-gage, which the doctor invented to meaſure unfathomable depths, was communicated to the public in the ſame miſcellany: this paper was drawn up about the year 1732 or 1733, by the doctor, for the late Colin Campbell, Eſq; who employed the ingenious Mr Hawkſbee to make the machine it deſcribes, which was tried in various depths, and anſwered with great exactneſs, yet was at laſt loſt near Bermuda. In 1754, he communicated to the Royal Society ſome experiments for keeping water and fiſh ſweet with lime-water, an account of which was publiſhed in the Philoſophical Tranſactions. He alſo continued to enrich their memoirs with many uſeful articles from this time till his death, particularly a method of forwarding the diſtillation of freſh from ſalt water by blowing ſhowers of freſh air up through the latter during the operation. In 1757 he communicated to the editor of the Gentleman's Magazine an eaſy method of purifying the air, and regulating its heat in melon-frames and green-houſes; alſo further improvements in his method of diſtilling ſea-water.

His reputation and the intereſt of his family and friends might eaſily have procured him farther preferment: but of farther preferment he was not deſirous; for being nominated by his late Majeſty to a canonry of Windſor, he engaged the princeſs to requeſt his majeſty to recal his nomination. That a man ſo devoted to philoſophical ſtudies and employments, and ſo conſcientious in the diſcharge of his duty, ſhould not deſire any preferment which would reduce him to the dilemma either of neglecting his duty, or foregoing his amuſement, is not ſtrange: but that he would refuſe an honourable and profitable appointment, for which no duty was to be done that would interrupt his habits of life, can ſcarce be imputed to his temperance and humility without impeaching his benevolence; for if he had no wiſh of any thing more for himſelf, a liberal mind would ſurely have been highly gratified by the diſtribution of ſo conſiderable a ſum as a canonry of Windſor would have put into his power, in the reward of induſtry, the alleviation of diſtreſs, and the ſupport of helpleſs indigence. He was, however, remarkable for ſocial virtue and ſweetneſs of temper; his life was not only blameleſs, but exemplary in a high degree; he was happy in himſelf, and beneficial to others, as appears by this account of his attainments and purſuits; the conſtant ſerenity and cheerfulneſs of his mind, and the temperance and regularity of his life, concurred, with a good conſtitution, to preſerve him in health and vigour to the uncommon age of fourſcore and four years. He died at Teddington in 1761; and was buried, purſuant to his own directions, under the tower of the pariſh-church, which he built at his own expence not long before his death.—Her royal highneſs the princeſs of Wales erected a monument to his memory in Weſtminſter abbey.

HALESIA, in botany: A genus of the monogynia order, belonging to the dodecandria claſs of plants; and in the natural method ranking under the 18th order, *Bicornes*. The calyx is quadridentated, ſuperior; the corolla quadrifid; the nut quadrangular and diſpermous.

HALESWORTH, a town of Suffolk in England, ſeated on a neck of land between two branches of the river Blith, 101 miles from London. It is a well frequented thriving place, and has a trade in linen yarn and ſail-cloth. It has one large church, and about 700 good houſes; but the ſtreets are neither wide nor paved. About the town is raiſed a great deal of hemp. E. Long. 1. 40. N. Lat. 52. 30.

Half-blood, in law, is where a man marries a ſecond wife, the firſt being dead, and by the firſt venter he has a ſon, and by his ſecond venter has likewiſe a ſon; the two brothers, in this caſe, are but of half-blood. See Consanguinity and Descent.

Half-*Merk*; a noble, or 6s. 8d.

Half *Moon*, in fortification; an outwork compoſed of two faces, forming a ſaliant angle, whoſe gorge is in form of a creſcent or half-moon, whence the name.

HALFPENNY, a copper coin, whoſe value is expreſſed by its name, in reference to the penny.

HALI-BEIGH, firſt dragoman or interpreter at the Grand Signior's court in the 17th century, was born of Chriſtian parents in Poland; but having been taken by the Tartars when he was young, they ſold him to the Turks, who brought him up in their religion in the ſeraglio. His name, in his native country, was Bobowſki. He learnt many languages, and Sir Paul Ricaut owns he was indebted to him for ſeveral things which he relates in his *Preſent ſtate of the Ottoman empire*. He held a great correſpondence with the Engliſh, who perſuaded him to tranſlate ſome books into the Turkiſh language: and he had a mind to return into the boſom of the Chriſtian church, but died before he could accompliſh the deſign. Dr Hyde publiſhed his book *Of the liturgy of the Turks, their pilgrimages to Mecca, their circumciſion and viſiting of the ſick.* He tranſlated the catechiſm of the church of England, and the bible, into the Turkiſh language. The MS. is lodged in the library of Leyden. He wrote likewiſe a Turkiſh grammar and dictionary.

HALICARNASSUS, (anc. geog.) a principal town of Caria, ſaid to be built by the Argives, and ſituated between two bays, the Ceramicus and Jaſius. It was the royal reſidence, (called *Zephyra* formerly); eſpecially of Mauſolus, made more illuſtrious by his monument. This monument was one of the ſeven wonders, and erected by Artemiſia. Halicarnaſſeus, or Halicarnaſſenſis, was the gentilitious name of Herodotus and Dionyſius. The former was called the Father of Hiſtory; and the latter was not only a good hiſtorian but alſo a critic.

HALIÆTUS, in orinthology. See Falco.

HALIEUTICS, Halieutica ΑΛΙΕΥΤΙΚΑ, formed of *αλιευς*, *fiſherman*, which is derived from *αλς*, *ſea*; books treating of fiſhes, or the art of fiſhing.—We have ſtill extant the halieutics of Oppian.

HALIFAX, the capital of the province of Nova Scotia in America, ſituated in W. Long. 64. 30. N. Lat. 44. 45. It was founded in 1749, in order to ſecure the Britiſh ſettlements there from the attempts of the French and Indians. It was divided into 35 ſquares, each containing 16 lots of 40 by 60 feet; one eſtabliſhed church, and one meeting-houſe, and a ſmall number of houſes out of the regular ſtreets. The town was ſurrounded by pickettings, and guarded by forts on the outſide; but ſince the commencement of the American troubles, it has been very ſtrongly fortified. Along the river Chebucto, to the ſouthward of the town, are buildings and fiſh-flakes for at leaſt two miles, and to the northward on the river for about one mile. The plan, however, has been greatly improved by the earl of Halifax, who was the original contriver. The proclamation iſſued for this ſettlement, offered 50 acres of land to every ſoldier and ſailor who would ſettle in that part of America, without paying any rent, or doing any ſervice for ten years, and no more than one ſhilling *per annum* for each 50 acres ever afterwards: to every ſoldier and ſailor who had a wife and children, ten acres more were added to every individual of his family, and for every increaſe that ſhould afterwards happen in the ſame proportion: To each ſubaltern officer 80 acres, and 15 for each of his family; 200 acres to each enſign; 300 to each lieutenant; 400 to each captain; 600 to every officer in rank above a captain, and 30 for each of his family. The government alſo engaged to tranſport and maintain the new ſettlers for one year at its own expence, and to furniſh them with ſuch arms, proviſions, utenſils, implements, &c. as ſhould be neceſſary to put them in a way to cultivate their lands, to build habitations, and to commence a fiſhery. The ſame conditions were likewiſe offered to all carpenters and other handicraftſmen; and ſurgeons were offered the ſame conditions with the enſigns.—This proclamation was publiſhed in March, and by the month of May 3700 perſons had offered themſelves. They accordingly embarked, and eſtabliſhed themſelves in the bay of Chebucto; calling their city *Halifax* from the title of their patron. Before the end of October the ſame year, 350 comfortable wooden houſes were built, and as many more during the winter.—The ſame year in which the ſettlers embarked, the government granted them 40,000l. for their expences. In 1750, they granted 57,582l. 17s. 3¼d. for the ſame purpoſe; in 1751, 53,927l. 14s. 4d.; in 1752, 61,492l. 19s. 4¼d.; in 1753, 94,615l. 12s. 4d.; in 1754, 58,447l. 2s.; and in 1755, 49,418l. 7s. 8d.—The place has at length attained a degree of ſplendor beyond what might have been expected; for which it has been equally indebted to the late war, to the great increaſe of population from the exiled loyaliſts, and the foſtering care of Great Britain; inſomuch, that the number of inhabitants has been more than doubled during the laſt ten years.

The harbour is perfectly ſheltered from all winds at the diſtance of 12 miles from the ſea, and is ſo ſpacious, that a thouſand ſail of ſhips may ride in it without the leaſt danger. Upon it there are built a great number of commodious wharfs, which have from 12 to 18 feet water at all times of the tide, for the convenience of loading and unloading ſhips. The ſtreets of the town are regularly laid out, and croſs each other at right angles; the whole riſing gradually from the water upon the ſide of a hill, whoſe top is regularly fortified, but not ſo as to be able to withſtand a regular attack. Many conſiderable merchants reſide at this place, and are poſſeſſed of ſhipping to the amount of ſeveral thouſand tons, employed in a flouriſhing trade both with Europe and the Weſt Indies. There is a ſmall but excellent careening yard for ſhips of the Britiſh navy that are upon this ſtation, or that may have occaſion to come in to refit, and take water, fuel, or freſh proviſions on board, in their paſſage to and from the Weſt Indies. It is always kept well provided with naval ſtores; and ſhips of the line are hove down and repaired with the greateſt eaſe and ſafety. Several batteries of heavy cannon command the harbour, particularly thoſe that are placed upon George's Iſland, which being very ſteep and high, and ſituated in mid-channel, a little way below the town is well calculated to annoy veſſels in any direction, as they muſt of neceſſity paſs very near it before they are capable of doing any miſchief. Above the careening yard, which is at the upper end of the town, there is a large baſon or piece of water, communicating with the harbour below, near 20 miles in circumference, and capable of containing the whole navy of England, entirely ſheltered from all winds, and having only one narrow entrance, which, as we obſerved before, leads into the harbour. There are a number of detached ſettlements lately formed by the loyaliſts upon the baſon; the lands at a ſmall diſtance from the water being generally thought better than thoſe near to Halifax; but what ſucceſs may attend their labours, will require ſome time to determine. An elegant and convenient building has been erected near the town for the convaleſcents of the navy; but the healthineſs of the climate, has as yet prevented many perſons from becoming patients, ſcarcely any ſhips in the world being ſo free from complaints of every kind, in regard to health, as thoſe that are employed upon this ſtation. There is a very fine light-houſe, ſtanding upon a ſmall iſland, juſt off the entrance of the harbour, which is viſible, either by night or day, ſix or ſeven leagues off at ſea.

HALIFAX, earl of. See SAVILLE.

HALIFAX, a town in the weſt riding of Yorkſhire in England, ſeated on the river Calder, in W. Long. 2. 0. N. Lat. 53. 45. It has the title of an earldom, and is very eminent for the clothier trade. The pariſh is ſaid to be the moſt populous, if not the moſt extenſive, in England: for it is above 30 miles in circumference; and, beſides the mother church at Halifax, and 16 meeting-houſes, has 12 chapels, two of which are parochial. What is a little ſingular, all the meeting-houſes here, except the quakers, have bells and burying-grounds. The woollens principally manufactured here are kerſeys and ſhalloons. Of the former it is affirmed, that one dealer hath ſent by commiſſion 60,000 pounds worth in a year to Holland and Hamburgh; and of the latter, it is ſaid, 100,000 pieces are made in this pariſh yearly. The inhabitants here and in the neighbouring towns are ſo entirely employed in theſe manufactures, that agriculture is but little minded. Moſt of their proviſions of all ſorts are brought from the north and eaſt ridings, and from Lancaſhire, Cheſhire, Nottinghamſhire, and Warwickſhire. The markets are very much crowded for the buying and ſelling proviſions and manufactures. The cloths, at the firſt erecting of the woollen manufactures in theſe parts, having been frequently ſtolen off the tenters in the night, a law was made, by which the magiſtrates of Halifax were empowered to paſs ſentence on, and execute all offenders, if they were taken in the fact, or owned it, or if the ſtolen cloth was found upon them, provided alſo the crime was committed, and the criminal apprehended, within the liberties of the foreſt of Hardwick. Thoſe found guilty were executed in the following manner: an axe was drawn by a pully to the top of a wooden engine, and faſtened by a pin, which being pulled out, the axe fell down in an inſtant, and did its work. If they had ſtole an ox, horſe, or any other beaſt, it was led with them to the ſcaffold, and there faſtened by a chord to the pin, that held up the axe; and when the ſignal was given by the jurors, who were the firſt burghers within the ſeveral towns of the foreſt, the beaſt was driven away, and the pin plucked out, upon which the axe fell and did its office. This ſevere and ſummary courſe of juſtice gave occaſion to a litany, which is ſtill much more frequent in the mouths of the beggars and vagrants of theſe parts, than is the common prayer, viz.

“ From Hell, Hull, and Halifax, good Lord deliver us.”

though neither the engine, nor manner of proceeding againſt them, are now in uſe.

HALIOTIS, the EAR-SHELL, a genus of inſects belonging to the order of vermes teſtacea. This is an animal of the ſnail-kind, with an open ſhell reſembling an ear. There are ſeven ſpecies, diſtinguiſhed by the figure of their ſhells. See Plate CCXXXIV.

HALITZ, a town of Poland, and capital of a territory of the ſame name, in Red Ruſſia, with a caſtle. It is ſeated on the river Neiſter. E. Long. 26 0. N. Lat. 49. 20.

HALL, in architecture, a large room at the entrance of a fine houſe and palace. Vitruvius mentions three kinds of halls; the tetraſtyle, with four columns ſupporting the platfond or ceiling; the Corinthian, with columns all round let into the wall, and vaulted over; and the Egyptian, which had a periſtyle of inſulated Corinthian columns, bearing a ſecond order with a ceiling.

The hall is properly the fineſt as well as firſt member of an apartment: and in the houſes of miniſters of ſtate, magiſtrates, &c. is the place where they diſpatch buſineſs, and give audience. In very magnificent buildings, where the hall is larger and loftier than ordinary, and placed in the middle of the houſe, it is called a *ſaloon*.

The length of a hall ſhould be at leaſt twice and a quarter its breadth; and in great buildings, three times its breadth. As to the height of halls, it may be two-thirds of the breadth; and, if made with an arched ceiling, it will be much handſomer, and leſs liable to accidents by fire. In this caſe, its height is found by dividing its breadth into ſix parts, five of which will be the height from the floor to the under ſide of the key of the arch.

HALL is alſo particularly uſed for a court of juſtice; or an edifice wherein there is one or more tribunals.

In Weſtminſter-hall are held the great courts of England, viz. the king's bench, chancery, common pleas, and exchequer. In adjoining apartments is likewiſe held the high court of parliament.

Weſtminſter-hall was the royal palace or place of reſidence of ancient Britiſh kings; who ordinarily held their parliaments, and courts of judicature, in their dwelling-houſes (as is ſtill done by the kings of Spain), and frequently ſat in perſon in the courts of judicature, as they ſtill do in parliament. A great part of this palace was burnt under Henry VIII. what remains is ſtill reſerved for the ſaid judicatories. The great hall, wherein the courts of king's bench, &c. are kept, is ſaid to have been built by William Rufus; others ſay by Richard I. or II. It is reckoned ſuperior, in point of dimenſions, to any hall in Europe; being 300 feet long and 100 broad.

HALL (Joſeph), an eminent prelate of the church of England, was born in 1574, and educated at Cambridge. He became profeſſor of rhetoric in that univerſity, and then ſucceſſively was made rector of Halſted in Suffolk, preſented to the living of Waltham in Eſſex, made prebendary of Wolverhampton, dean of Worceſter, biſhop of Exeter, and laſtly of Norwich. His works teſtify his zeal againſt Popery, and are much eſteemed. He lamented the diviſions of the Proteſtants, and wrote ſomething concerning the means of putting an end to them. July 1616, he attended the embaſſy of lord Doncaſter into France, and upon his return was appointed by his majeſty to be one of the divines, who ſhould attend him into Scotland. In 1618 he was ſent to the ſynod of Dort with other divines, and pitched upon to preach a Latin ſermon before that aſſembly. But being obliged to return from thence before the ſynod broke up, on account of his health, he was by the ſtates preſented with a gold medal. He wrote, 1. Miſcellaneous epiſtles. 2. *Mundus alter et idem*. 3. A juſt cenſure of travellers. 4. The Chriſtian Seneca. 5. Satires, in ſix books. 6. A century of meditations; and many other works, which, beſides the above ſatires, make in all five volumes in folio and quarto. He died in 1656.

HALL (John), a poet of diſtinguiſhed learning, was born at Durham, and educated at Cambridge, where he was eſteemed the brighteſt genius in that univerſity. In 1646, when he was but 19 years of age, he publiſhed his *Horæ Vacivæ*, or Eſſays; and the ſame year came out his poems. He tranſlated from the Greek “ Hierocles upon the golden verſes of Pythagoras; before which is an account of the ingenious tranſlator and his works, by John Davies of Kidwelly. He died in 1656, aged 29.

HALLAGE, a fee or toll paid for cloth brought to be ſold in Blackwell-hall, London.

HALLAMAS, in old Engliſh writers, the day of all-hallows, or all-ſaints, viz. November 1. It is one of the croſs quarters of the year which was computed, in ancient writings, from Hallamas to Candlemas.

HALLAND, a country of Sweden, in the iſland of Schonen, lying along the ſea-coaſt, at the entrance of the Baltic Sea, and oppoſite to Jutland. It is 60 miles along the coaſt, but is not above 12 in breadth. Halmſtadt is the capital town.

HALLATON, a town of Leiceſterſhire, in England. It is ſeated on a rich ſoil, 12 miles ſouth-eaſt of Leiceſter, in E. Long. 0. 50. N. Lat. 52 35.

HALLE, a little diſmantled town of the Auſtrian Netherlands, in Hainault. The church of Notre Dame contains an image of the Virgin Mary, held in great veneration. E. Long. 3. 15. N. Lat. 50. 44.

HALLE, a handſome and conſiderable town of Germany, in the circle of Upper Saxony, and in the duchy of Magdeburg, with a famous univerſity and ſalt-works. It belongs to the king of Pruſſia; and is ſeated in a pleaſant plain on the river Sale, in E. Long. 12. 23. N. Lat. 51. 36.

HALLE, a free and imperial town of Germany, in Suabia, famous for its ſalt-pits. It is ſeated on the river Kocher, among rocks and mountains, in E Long. 10. 50. N. Lat. 49 6.

HALLEIN, a town of Germany, in the circle of Bavaria, and archbiſhopric of Saltſburg; ſeated on the river Saltza, among the mountains, wherein are mines of ſalt, which are the chief riches of the town and country. E. Long. 12. 15. N. Lat. 47. 33.

HALLELUJAH, a term of rejoicing, ſometimes ſung or rehearſed at the end of verſes on ſuch occaſions.

The word is Hebrew; or rather, it is two Hebrew words joined together; one of them הללו, *hallelu*, and the other יה *jah*; an abridgement of the name of God, יהוה *Jehovah*. The firſt ſignifies *laudate*, "praiſe ye;" and the other, *Dominum*, "the Lord."

St Jerome firſt introduced the word hallelujah into the church ſervice; for a conſiderable time it was only uſed once a year in the Latin church, viz. at Eaſter: but in the Greek church it was much more frequent. St Jerome mentions its being ſung at the interments of the dead, which ſtill continues to be done in that church, as alſo on ſome occaſions in the time of Lent.

In the time of Gregory the Great, it was appointed to be ſung all the year round in the Latin church, which raiſed ſome complaints againſt that pope; as giving too much into the Greek way, and introducing the ceremonies of the church of Conſtantinople into that of Rome. But he excuſed himſelf by alleging, that this had been the ancient uſage of Rome; and that it had been brought from Conſtantinople at the time when the word hallelujah was firſt introduced under pope Damaſcus.

HALLER (Albert Van), an eminent phyſician, was born at Bern, on the 16th of October 1708. He was the ſon of an advocate of conſiderable eminence in his profeſſion. His father had a numerous family, and Albert was the youngeſt of five ſons. From the firſt period of his education, he ſhowed a very great genius for literature of every kind: to forward the progreſs of his ſtudies, his father took into his family a private tutor, named *Abraham Billodz*; and ſuch was the diſcipline exerted by this pedagogue, that the accidental ſight of him, at any future period of life, excited in Haller very great uneaſineſs, and renewed all his former terrors. According to the accounts which are given us, the progreſs of Haller's ſtudies, at the earlieſt periods of life was rapid almoſt beyond belief. When other children were beginning only to read, he was ſtudying Bayle and Moreri: and at nine years of age he was able to tranſlate Greek, and was beginning the ſtudy of Hebrew. Not long after this, however, the courſe of his education was ſomewhat interrupted by the death of his father; an event which happened when he was in the 13th year of his age. After this he was ſent to the public ſchool at Bern, where he exhibited many ſpecimens of early and uncommon genius. He was diſtinguiſhed for his knowledge in the Greek and Latin languages; but he was chiefly remarkable for his poetical genius; and his eſſays of this kind, which were publiſhed in the German language, were read and admired throughout the whole empire. In the 26th year of his age he began the ſtudy of medicine at Tubingen, under thoſe eminent teachers Duvernoy and Camerarius: and continued there for the ſpace of two years, when the great reputation of the juſtly celebrated Boerhaave drew him to Leyden. Nor was this diſtinguiſhed teacher the only man from whoſe ſuperior abilities he had there an opportunity of profiting. Ruyſch was ſtill alive, and Albinus was riſing into fame. Animated by ſuch examples, he ſpent all the day, and the greateſt part of the night, in the moſt intenſe ſtudy; and the proficiency which he made, gained him univerſal eſteem both from his teachers and fellow ſtudents. From Holland, in the year 1727, he came to England. There, however, his ſtay was but ſhort; and it was rather his intention to viſit the illuſtrious men of that period, than to proſecute his ſtudies at London. He formed connections with ſome of the moſt eminent of them. He was honoured with the friendſhip of Douglas and Cheſelden; and he met with a reception proportioned to his merit from Sir Hans Sloane, preſident of the Royal Society. After his viſit to Britain, he went to France; and there, under thoſe eminent maſters, Winſlow and Le Dran, with the latter of whom he reſided during his ſtay in Paris, he had opportunities of proſecuting anatomy, which he had not before enjoyed. But the zeal of our young anatomiſt was greater than the prejudices of the people at that period, even in the enlightened city of Paris, could admit of. An information being lodged againſt him to the police for diſſecting dead bodies, he was obliged to cut ſhort his anatomical inveſtigations by a precipitate retreat. Still, however, intent on the farther proſecution of his ſtudies, he went to Baſil, where he became a pupil to the celebrated Bernoulli.

Thus improved and inſtructed by the lectures of the moſt diſtinguiſhed teachers of that period, by uncommon natural abilities, and by unremitting induſtry, he returned to the place of his nativity in the 26th year of his age. Not long after this, he offered himſelf a candidate, firſt for the office of phyſician to an hoſpital, and afterwards for a profeſſorſhip. But neither the character which he had before he left his native country, nor the fame which he had acquired and ſupported while abroad, were ſufficient to combat the intereſt oppoſed to him. He was diſappointed in both; and it was even with difficulty that he obtained, in the following year, the appointment of keeper of a public library at Bern. The exerciſe of this office was indeed by no means ſuited to his great abilities: but it was agreeable to him, as it afforded him an opportunity for that extenſive reading by which he has been ſo juſtly diſtinguiſhed. The neglect of his merit which marked his firſt outſet, neither diminiſhed his ardour for medical purſuits, nor detracted from his reputation either at home or abroad. And ſoon after he was nominated a profeſſor in the univerſity of Gottingen, by king George II. The duties of this important office he diſcharged, with no leſs honour to himſelf than advantage to the public, for the ſpace of 17 years; and it afforded him an ample field for the exertion of thoſe great talents which he poſſeſſed. Extenſively acquainted with the ſentiments of others reſpecting the oeconomy of the human body, ſtruck with the diverſity of opinions which they held, and ſenſible that the only means of inveſtigating truth was by careful and candid experiments, he undertook the arduous taſk of exploring the phænomena of human nature from the original ſource. In theſe purſuits he was no leſs induſtrious than ſucceſsful, and there was hardly any function of the body on which his experiments did not reflect either a new or a ſtronger light. Nor was it long neceſſary for him, in this arduous undertaking, to labour alone. The example of the preceptor inſpired his pupils with the ſpirit of induſtrious exertion. Zinn, Zimmerman, Caldani, and many others, animated by a generous emulation, laboured with indefatigable induſtry to proſecute and to perfect the diſcoveries of their great maſter. And the mutual exertion of the teacher and his ſtudents, not only tended to forward the progreſs of medical ſcience, but placed the philoſophy of the human body on a more ſure, and almoſt entirely new, baſis. But the labours of Dr Haller, during his reſidence at Gottingen, were by no means confined to any one department of ſcience. He was not more anxious to be an improver himſelf, than to inſtigate others to ſimilar purſuits. To him, the Anatomical Theatre, the School of Midwifery, Chirurgical Society, and the Royal Academy of Sciences at Gottingen, owe their origin. Such diſtinguiſhed merit could not fail to meet with a ſuitable reward from the ſovereign under whoſe protection he then taught. The king of Great Britain not only honoured him with every mark of attention which he himſelf could beſtow, but procured him alſo letters of nobility from the emperor. On the death of Dillenius, he had an offer of the profeſſorſhip of botany at Oxford; the ſtates of Holland invited him to the chair of the younger Albinus; the king of Pruſſia was anxious that he ſhould be the ſucceſſor of Maupertuis at Berlin. Marſhal Keith wrote to him in the name of his ſovereign, offering him the chancellorſhip of the univerſity of Halle, vacant by the death of the celebrated Wolff. Count Orlow invited him to Ruſſia, in the name of his miſtreſs the empreſs, offering him a diſtinguiſhed place at St Peterſbourgh. The king of Sweden conferred on him an unſolicited honour, by raiſing him to the rank of knighthood of the order of the polar ſtar; and the emperor of Germany did him the honour of a perſonal viſit: during which he thought it no degradation of his character to paſs ſome time with him in the moſt familiar converſation.

Thus honoured by ſovereigns, revered by men of literature, and eſteemed by all Europe, he had it in his power to have held the higheſt rank in the republic of letters. Yet declining all the tempting offers which were made to him, he continued at Gottingen, anxiouſly endeavouring to extend the riſing fame of that medical ſchool. But after 17 years reſidence in that univerſity, an ill ſtate of health rendering him leſs fit for the duties of the important office which he held, he ſolicited and obtained permiſſion from the regency of Hanover to return to his native city of Bern. His fellow-citizens, who might at firſt have fixed him among themſelves, with no leſs honour than advantage to their city, were now as ſenſible as others of his ſuperior merit. A penſion was ſettled upon him for life, and he was nominated at different times to fill the moſt important offices in the ſtate. Theſe occupations, however, did not diminiſh his ardour for uſeful improvements. He was the firſt preſident, as well as the greateſt promoter, of the Oeconomical Society at Bern; and he may be conſidered as the father and founder of the Orphan Hoſpital of that city. Declining health, however, reſtrained his exertions in the more active ſcenes of life, and for many years he was confined entirely to his own houſe. Even, this however, could not put a period to his utility: for, with indefatigable induſtry, he continued his favourite employment of writing till within a few days of his death; which happened in the 70th year of his age, on the 12th of December 1777. His *Elementa Phyſiologiæ* and *Bibliotheca Medicinæ*, will afford, to lateſt poſterity, undeniable proofs of his indefatigable induſtry, penetrating genius, and ſolid judgment. But he was not leſs diſtinguiſhed as a philoſopher than beloved as a man; and he was not more eminent for his improvement in every department of medical ſcience, than for his piety to God, and benevolence to all mankind.

HALLERIA, in botany; A genus of the angioſpermia order, belonging to the didynamia a claſs of plants; and in the natural method ranking under the 40th order, *Perſonatæ*. The calyx is trifid; the corolla quadrifid; the filaments longer than the corolla; the berry inferior and bilocular, (the fruit not yet fully deſcribed.)

HALLEY (Dr Edmund), an eminent aſtronomer, was the only ſon of a ſoap-boiler in London, and was born in 1656. He firſt applied himſelf to the ſtudy of the languages and ſciences, but at length gave himſelf up wholly to that of aſtronomy. In 1676 he went to the iſland of St Helena to complete the catalogue of fixed ſtars, by the addition of thoſe which lie near the ſouth pole; and having delineated a planiſphere in which he laid them all down in their exact places, he returned to England in 1678. In the year 1680 he took what is called the *grand tour*, accompanied by his friend the celebrated Mr Nelſon. In the midway between Calais and Paris, Mr Halley had a ſight of a remarkable comet, as it then appeared a ſecond time that year, in its return from the ſun. He had the November before ſeen it in its deſcent; and now haſtened to complete his obſervations upon it, in viewing it from the royal obſervatory of France. His deſign in this part of his tower was, to ſettle a friendly correſpondence between the two royal aſtronomers of Greenwich and Paris: and in the mean time to improve himſelf under ſo great a maſter as Caſſini. From thence he went to Italy, where he ſpent great part of the year 1681; but his affairs calling him home, he returned to England. In 1683, he publiſhed his *Theory of the variation of the magnetical compaſs*; in which he ſuppoſes the whole globe of the earth to be a great magnet, with four magnetical poles, or points of attraction: but afterwards thinking that this theory was liable to great exceptions, be procured an application to be made to king William, who appointed him commander of the Paramour Pink, with orders to ſeek by obſervations the diſcovery of the rule of variations, and to lay down the longitudes and latitudes of his majeſty's ſettlements in America.—He ſet out on this attempt on the 24th of November 1698: but having croſſed the line, his men grew ſickly; and his lieutenant mutinying, he returned home in June 1699. Having got the lieutenant tried and caſhiered, he ſet ſail a ſecond time in September following, with the ſame ſhip and another of leſs bulk, of which he had alſo the command. He now traverſed the vaſt Atlantic ocean from one hemiſphere to the other as far as the ice would permit him to go; and having made his obſervations at St Helena, Brazil, Cape Verd, Barbadoes, the Madeiras, the Canaries, the coaſt of Barbary, and many other latitudes, arrived in September 1700; and the next year publiſhed a general chart, ſhowing at one view the variation of the compaſs in all thoſe places. Captain Halley, as he was now called, had been at home little more than half a year, when he was ſent by the king, to obſerve the courſe of the tides, with the longitude and latitude of the principal head-lands in the Britiſh channel; which having executed with his uſual expedition and accuracy, he publiſhed a large map of the Britiſh channel. Soon after, the emperor of Germany reſolving to make a convenient harbour for ſhipping in the Adriatic, Captain Halley was ſent by queen Anne to view the two ports on the coaſt of Dalmatia. He embarked on the 22d of November 1702; paſſed over to Holland; and going through Germany to Vinena, he proceeded to Iſtria: but the Dutch oppoſing the deſign, it was laid aſide; yet the emperor made him a preſent of a rich diamond-ring from his finger, and honoured him with a letter of recommendation, written with his own hand, to queen Anne. Preſently after his return, he was ſent again on the ſame buſineſs; when paſſing through Hanover, he ſupped with king George I. then electoral prince, and his ſiſter the queen of Pruſſia. On his arrival at Vienna, he was the ſame evening preſented to the emperor, who ſent his chief engineer to attend him to Iſtria, where they repaired and added new fortifications to thoſe of Trieſte. Mr Halley returned to England in 1703; and the ſame year was made profeſſor of geometry in the univerſity of Oxford, in the room of Dr Wallis, and had the degree of doctor of laws conferred on him by that univerſity. He is ſaid to have loſt the profeſſorſhip of aſtronomy in that city, becauſe he would not profeſs his belief of the Chriſtian religion. He was ſcarcely ſettled at Oxford, when he began to tranſlate into Latin from the Arabic, *Apollonius de ſectione rationis*; and to reſtore the two books *De ſectione ſpatii* of the ſame author, which are loſt, from the account given of them by Pappius; and he publiſhed the whole work in 1706. Afterwards he had a ſhare in preparing for the preſs Apollonius's Conics; and ventured to ſupply the whole eighth book, the original of which is alſo loſt. He likewiſe added Serenus on the ſection of the cylinder and cone, printed from the original Greek, with a Latin tranſlation, and publiſhed the whole in folio. In 1714, he was made ſecretary of the Royal Society; in 1720, he was appointed the king's aſtronomer at the royal obſervatory at Greenwich, in the room of Mr Flamſtead; and, in 1729, was choſen as a foreign member of the Academy of Sciences at Paris. He died at Greenwich in 1742. His principal works are, 1. *Catalogus ſtellarum auſtralium.* 2. *Tabulæ aſtronomicæ.* 3. an abridgment of the aſtronomy of comets, &c. We are alſo indebted to him for the publication of ſeveral of the works of the great Sir Iſaac Newton, who had a particular friendſhip for him, and to whom he frequently communicated his diſcoveries.

Halley's Quadrant. See Quadrant.

HALLIARDS, the ropes or tackles uſually employed to hoiſt or lower any ſail upon its reſpective maſt or ſtay. See Jears.

HALMOTE, or Halimote, is the ſame with what is now called a *court-baron*, the word implying a meeting of the tenants of the ſame hall or manor. The name is ſtill retained at Luſton, and other places in Herefordſhire, England. See Mote.

HALMSTADT. See Helmstadt.

HALO, or Corona, in natural hiſtory, a coloured circle appearing round the body of the ſun, moon, or any of the large ſtars. See Corona.

HALORAGUS, in botany: A genus of the tetragynia order, belonging to the octandria claſs of plants. The calyx is quadrifid above; there are four petals; a dry plum, and a quadrilocular nut.

HALESTEAD, a town of Eſſex in England, ſeated on the river Coln, 45 miles from London. It has an old church, the ſteeple of which was once burnt down by lightning, but rebuilt at the expence of an individual, (Robert Fiſke, Eſq;). The town conſiſts of about 600 pretty good houſes, and is ſituated on a riſing ground, but the ſtreets are not paved. The inhabitants are about 4000 in number. Here is a good manufactory of ſays, bays, callimancoes, &c. alſo a good free ſchool for 40 boys, and a very antique Bridewell. Its market on Friday is noted for corn.

HALT, in war, a pauſe or ſtop in the march of a military body.—Some derive the word from the Latin *halitus*, "breath;" it being a frequent occaſion of halting to take breath: others from *alto*, becauſe in halting they raiſed their pikes on end, &c.

HALTER, in the manege, a head-ſtall for a horſe, of Hungary leather, mounted with one, and ſometimes two ſtraps, with a ſecond throat-band, if the horſe is apt to unhalter himſelf.

Halter-Caſt, is an excoriation of the paſtern, occaſioned by the halter's being entangled about the foot, upon the horſe's endeavouring to rub his neck with his hinder feet. For the cure of this, anoint the place, morning and evening, with equal quantities of linſeed oil and brandy, well mixed.

HALTERISTÆ, in antiquity, a kind of players at diſcus; denominated from a peculiar kind of diſcus called by the Greeks αλτηρ, and by the Latins *halter*. See Discus.

Some take the diſcus to have been a leaden weight or ball which the vaulters bore in their hands, to ſecure and keep themſelves the more ſteady in their leaping. Others will have the halter to be a lump or maſs of lead or ſtone, with an hole or handle fixed to it, by which it might be carried; and that the halteriſtæ were thoſe who exerciſed themſelves in removing theſe maſſes from place to place.

Hier. Mercurialis, in his treatiſe *De arte gymnaſtica*, l. ii. c. 12. diſtinguiſhes two kinds of halteriſtæ; for though there was but one halter, there were two ways of applying it. The one was to throw or pitch it in a certain manner; the other only to hold it out at arm's-end, and in this poſture to give themſelves divers motions, ſwinging the hand backwards and forwards according to the engraven figures thereof given us by Mercurialis.—The halter was of a cylindrical figure, ſmaller in the middle, where it was held, by one diameter, than at the two ends. It was above a foot long, and there was one for each hand: it was either of iron, ſtone, or lead.

Galen, *De tuend. valetud.* lib. i. v. & vi. ſpeaks of this exerciſe, and ſhows of what uſe it is in purging the body of peccant humours; making it equivalent both to purgation and phlebotomy.

HALTON, or HAULTON, i. e. *High Town*, a town of Cheſhire, 186 miles from London. It ſtands on a hill, where a caſtle was built anno 1071, and is a member of the duchy of Lancaſter; which maintains a large juriſdiction in the country round it, by the name of *Halton-Fee*, or the *honour of Halton*, having a court of record, priſon, &c. within themſelves. About Michaelmas every year, the king's officers of the duchy keep a law-day at the caſtle, which ſtill remains a ſtately building: once a fortnight a court is kept here, to determine all matters within their juriſdiction; but felons and thieves are carried to the ſeſſions at Cheſter, to receive their ſentence. By the late inland navigation, it has communication with the rivers Merſey, Dee, Ribble, Ouſe, Trent, Darwent, Severn, Humber, Thames, Avon, &c. which navigation, including its windings, extends about 500 miles, in the counties of Lincoln, Nottingham, York, Lancaſter, Weſtmoreland, Stafford, Warwick, Leiceſter, Oxford, Worceſter, &c.

HALTWHISTLE, a town of Northumberland in England, ſituated in E. Long. 2. 0. N. Lat. 55. 0. It is pretty well built, and affords good entertainment for travellers.

HALYMOTE, properly ſignifies an holy or eccleſiaſtical court. See HALMOTE.

There is a court held in London by this name before the Lord Mayor and ſheriffs, for regulating the bakers. It was anciently held on Sunday next before St Thomas's day, and for this reaſon called the *Halymote*, or *Holy-court*.

HALYS, (anc. geog.) the nobleſt river of the Hither Aſia, through which it had a long courſe, was the boundary of Crœſus's kingdom to the eaſt. Running down from the foot of mount Taurus, through Cataonia and Cappadocia, it divided almoſt the whole of the Lower Aſia, from the ſea of Cyprus down to the Euxine, according to Herodotus; who ſeems to extend its courſe too far. According to Strabo, himſelf a Cappadocian, it had its ſprings in the Great Cappadocia. It ſeparated Paphlagonia from Cappadocia; and received its name απο του αλος, from ſalt, becauſe its waters were of a ſalt and bitter taſte, from the nature of the ſoil over which they flowed. It is famous for the defeat of Crœſus king of Lydia, who was miſled by the ambiguous word of this oracle:

> Χροισος αλυν διαβας μεγαλην αρχην διαλυσει.
>
> If Crœſus paſſes over the Halys he ſhall deſtroy a great empire.

That empire was his own. See CROESUS and LYDIA.

HALYWERCFOLK, in old writers, were perſons who enjoyed land, by the pious ſervice of repairing ſome church, or defending a ſepulchre.

This word alſo ſignified ſuch perſons in the dioceſe of Durham, as held their lands to defend the corps of St Cuthbert, and who from thence claimed the privilege of not being forced to go out of the biſhopric.

HAM, or CHAM (anc. geog.), the country of the Zuzims (Gen. xiv. 5.) the ſituation whereof is not known.

HAM, the youngeſt ſon of Noah. He was the father of Cuſh, Mizraim, Phut, and Canaan; each whereof had the ſeveral countries peopled by them. With reſpect to Ham, it is believed that he had all Africa for his inheritance, that he peopled it with his children. As for himſelf, it is thought by ſome that he dwelt in Egypt; but M. Baſnage is rather of opinion, that neither Ham nor Mizraim ever were in Egypt, but that their poſterity ſettled in this country, and called it by the name of their anceſtors. And as to Ham's being worſhipped as a god, and called *Jupiter Hammon*, he thinks people may have been led into this miſtake by the ſimilitude of names; and that Jupiter Hammon was the ſun, to which divine honours have been paid at all times in Egypt. However that may be, Africa is called the land of Ham, in ſeveral places of the pſalms, (Pſal. lxxvii. 51. civ. 23. cv. 22.) In Plutarch, Egypt is called *Chemia*; and there are ſome footſteps of the name of *Ham* or *Cham* obſerved in Pſochemmis, Pſitta-chemmis, which are cantons of Egypt.

HAM, a ſaxon word uſed for "a place of dwelling;" a village or town: hence the termination of ſome of our towns, *Nottingham*, *Buckingham*, &c. Alſo a home cloſe, or little narrow meadow, is called a *ham*.

HAM is alſo a part of the leg of an animal; being the inner or hind part of the knee, or the ply or angle in which the leg and thigh, when bent, incline to each other.

HAM, in commerce, &c. is uſed for a leg or thigh of pork, dried, ſeaſoned, and prepared, to make it keep, and to give it a briſk agreeable flavour.

Weſtphalia hams, ſo much in vogue, are prepared by ſalting them with ſaltpetre, preſſing them in a preſs eight or ten days, then ſteeping them in juniper-water, and drying them by the ſmoke of juniper-wood.

A ham may be ſalted in imitation of thoſe of Weſtphalia, by ſprinkling a ham of young pork with ſalt for one day, in order to fetch out the blood; then wiping it dry, and rubbing it with a mixture of a pound of brown ſugar, a quarter of a pound of ſaltpetre, half a pint of bay ſalt, and three pints of common ſalt, well ſtirred together in an iron pan over the fire till they are moderately hot: let it lie three weeks in this ſalting, and be frequently turned, and then dry it in a chimney.

HAM, a city of Germany, in the circle of Weſtphalia, capital of the county of Mark, and ſubject to the king of Pruſſia. It is ſeated on the river Lippe, on the frontiers of Munſter. The adjacent country abounds in corn, hemp, and flax; and the inhabitants get a good deal of money by travellers. It was formerly a Hanſe-town, but is now reduced. E. Long. 7. 53 N. Lat. 51. 42.

HAM, a town of Picardy, in France, ſeated on the river Somme, among marſhes. It has three pariſhes, and there is here a round tower whoſe walls are 36 feet thick. It was taken by the Spaniards in 1557, but reſtored by treaty. E. Long. 3. 9. N. Lat. 49. 45.

HAMADAN. See AMADAN.

HAMADRYADES (formed of αμα *together*, and δρυας *dryad*, of δρυς *oak*), in antiquity, certain fabulous deities revered among the ancient heathens, and believed to preſide over woods and foreſts, and to be incloſed under the bark of the oaks. The hamadryades were ſuppoſed to live and die with the trees they were attached to; as is obſerved by Servius on Virgil, Eclog. x. ver. 62. after Mneſimachus, the ſcholiaſt of Apollonius, &c. who mentions other traditions relating thereto.

The poets, however, frequently confound the Hamadryads with the Naiades, Napææ, and rural nymphs in general; witneſs Catullus, Carm. lxviii. ver. 23. Ovid, Faſt. iv. 229. Met. i. ver. 605. xiv. ver. 628. Propertius, Eleg. xx. 32. Virg. Ecl. x. ver. 64. Georg. iv. ver. 382, 383. Feſtus calls them *Querquetulanæ*, as being iſſued or ſprung from oaks. An ancient poet, Pherenicus, in Athenæus, lib. iii. calls the vine, fig-tree, and other fruit-trees, *Hamadryades*, from the name of their mother the oak.

This common idea among the ancients, of nymphs or intellectual beings annexed to trees, will account for their worſhipping of trees; as we find they did, not only from their poets but their hiſtorians. Livy ſpeaks of an ambaſſador's addreſſing himſelf to an old oak, as to an intelligent perſon and a divinity, Lib. iii § 25.

HAMAH, a town of Turkey in Aſia, in Syria, ſituated in E. Long. 36. 15. N. Lat. 35. 15. By ſome travellers it is corruptly called *Amarl* and *Amant*. Some miſtake it for the ancient Apamea; but this is now called *Afamiyah*, and is ſituated a days journey from Hamah. Hamah is ſituated among hills, and has a caſtle ſeated on a hill. It has all along been a conſiderable place, and in the 13th century had princes of its own. It is very large, and being ſeated on the aſcent of a hill, the houſes riſe above one another, and make a fine appearance. It is, however, like moſt other towns under the Turkiſh government, going to decay. Many of the houſes are half ruined; but thoſe which are ſtill ſtanding, as well as the moſques and caſtle, have their walls built of black and white ſtones, diſpoſed in ſuch a manner as to form various figures. The river Aſſi, the ancient Orontes, runs by the ſide of the caſtle, and fills the ditches round it, which are cut very deep into the rock. This river, leaving the caſtle, paſſes through the town from ſouth to north, and has a bridge over it, though it is pretty broad. In its courſe through the town it turns 18 great wheels, called by the natives *ſaki*, which raiſe great quantities of water to a conſiderable height, and through it into canals ſupported by arches, by which means it is conveyed into the gardens and fountains. There are ſome pretty good bazars or market-places in Hamah, where there is a trade for linen, which is manufactured there, and ſent to Tripoli to be exported to Europe.

HAMAMELIS, WITCH HAZEL; A genus of the digynia order, belonging to the tetrandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The involucrum is triphyllous, the proper calyx tetraphylous; there are four petals; the nut horned and bilocular. There is but one ſpecies, a native of Virginia. It hath a ſhrubby or woody ſtem, branching three or four feet high; oval, indented, alternate leaves, reſembling thoſe of common hazel; and flowers growing in cluſters from the joints of the young branches, but not ſucceeded by ſeeds in Britain.—The plant is hardy, and is admitted as a variety in gardens; but its flowers are more remarkable for their appearing in November and December, when the leaves are fallen, than for their beauty.—It may be propagated either by ſeeds or layers.

HAMAM LEEF, a town 12 miles eaſt from Tunis, noted for its hot baths, which are much reſorted to by the Tuniſians, and are efficacious in rheumatiſm and many other complaints. Here the Bey has a very fine bath, which he frequently permits the conſuls and other perſons of diſtinction to uſe.

HAMATH, a city of Syria, capital of a province of the ſame name, lying upon the Orontes. "The entering into Hamath," which is frequently ſpoken of in ſcripture, (Joſh. xiii. 5. Judges iii. 3. 2 Kings xiv. 25. and 2 Chron. vii. 8.) in the narrow paſs leading from the land of Canaan through the valley which lies between Libanus and Antilibanus. This entrance into Hamath is ſet down as the northern boundary of the land of Canaan, in oppoſition to the ſouthern limits, the Nile or river of Egypt. Joſephus, and St Jerom after him, believed Hamath to be Epiphania. But Theodoret, and many other good geographers maintain it to be Emeſa in Syria. Joſhua (xix. 35.) aſſigns the city of Hamath to the tribe of Naphtali. Toi king of Hamath cultivated a good underſtanding with David, (2 Sam. viii. 9.) This city was taken by the king of Judah, and retaken from the Syrians by Jeroboam the ſecond, (2 Kings xiv. 28.) The kings of Aſſyria made themſelves maſters of it upon the declenſion of the kingdom of Iſrael, and tranſplanted the inhabitants of Hamath into Samaria (2 Kings xvii. 24. and xviii. 34. &c.)

HAMAXOBII, HAMAXOBIANS, in the ancient geography, a people who had no houſes, but lived in carriages. The word is formed from αμαξα a *carriage* or *chariot*, and βιος *life*.

The *Hamaxobii*, called alſo *Hamaxobitæ*, were an ancient people of Sarmatia Europæa, inhabiting the ſouthern part of Muſcovy, who inſtead of houſes had a ſort of tents made of leather, and fixed on carriages to be ready for ſhifting and travel.

HAMBDEN (John), a celebrated patriot, deſcended of the ancient family of Hambden in Buckinghamſhire, was born in 1594. From the univerſity he went to the inns of court, where he made a conſiderable progreſs in the ſtudy of the law. He was choſen to ſerve in the parliament which began in Weſtminſter February 5. 1626; and ſerved in all the ſucceeding parliaments in the reign of Charles I. In 1636 he became univerſally known, by his refuſal to pay ſhip-money, as being an illegal tax; upon which he was proſecuted, and his carriage throughout this tranſaction gained him a great character. When the long parliament began, the eyes of all men were fixed on him as their *pater patriæ*. On January 3. 1642, the king ordered articles of high treaſon and other miſdemeanours to be prepared againſt Lord Kimbolton, Mr Hambden, and four other members of the Houſe of Commons, and went to that houſe to ſeize them: but they were then retired. Mr Hambden afterwards made a ſpeech in the houſe to clear himſelf of the charge laid againſt him. In the beginning of the wars he commanded a regiment of foot, and did good ſervice

vice to the parliament at the battle of Edge-hill. He received a mortal wound in an engagement with prince Rupert, in Chalgrave-field in Oxfordſhire, and died in 1643. He is ſaid to have had the art of Socrates to a great degree, of interrogating, and under the notion of doubts, inſinuated objections, ſo that he infuſed his own opinions into thoſe from whom he pretended to learn and receive them. He was, ſays his panegyriſt, a very wiſe man and of great parts; and poſſeſſed of the moſt abſolute ſpirit of popularity to govern the people, that ever was in any country: he was maſter over all his appetites and paſſions, and had thereby a very great aſcendant over other mens: he was of an induſtry and vigilance never to be tired out, of parts not to be impoſed upon by the moſt ſubtile, and of courage equal to his beſt parts.

HAMBURG, an imperial city of Germany, ſeated in E. Long. 9. 40. N. Lat. 54. 0. Its name is derived from the old German word *Hamme*, ſignifying a wood, and *Burg*, a caſtle; and ſtands on the north-ſide of the river Elbe. This river is not leſs than four miles broad oppoſite the city. It forms two ſpacious harbours, and likewiſe runs through moſt part of it in canals. It flows above Hamburg many miles; but when the tide is accompanied with north-weſt winds, a great deal of damage is done by the inundations occaſioned thereby. There are a great many bridges over the canals, which are moſtly on a level with the ſtreets, and ſome of them have houſes on both ſides. In the year 833, Ludovicus Pius erected Hamburg firſt into a biſhopric, and afterwards into an archbiſhopric; and Adolphus III. duke of Saxony, among many other great privileges, granted it the right of fiſhing in the Elbe, eight miles above and below the city. The king of Denmark, ſince they have ſucceeded to the counts of Holſtein, have continually claimed the ſovereignty of this place, and often compelled the citizens to pay large ſums to purchaſe the confirmation of their liberties. Nay, it has more than once paid homage to the kings of Denmark; who, notwithſtanding, keep a miniſter here with credentials, which is a ſort of acknowledgment of its independency and ſovereignty. Though Hamburg has been conſtantly ſummoned to the diet of the empire ever ſince the year 1618, when it was declared a free imperial city by a decree of the aulic council; yet it waves this privilege, in order to keep fair with Denmark. By their ſituation among a number of poor princes, the Hamburghers are continually expoſed to their rapaciouſneſs, eſpecially that of the Danes, who have extorted vaſt ſums from them. The city is very populous in proportion to its bulk; for though one may walk with eaſe round the ramparts in two hours, yet it contains, excluſive of Jews, at leaſt 100,000 inhabitants. Here are a great many charitable foundations, the regulations of which are greatly admired by foreigners. All perſons found begging in the ſtreets are committed to the houſe of correction to hard labour, ſuch as the raſping of Brazil and other kinds of wood. There is an hoſpital into which unmarried women may be admitted for a ſmall ſum, and comfortably maintained during the reſidue of their lives. The number of hoſpitals in this place is greater in proportion to its bigneſs than in any other Proteſtant city in Europe. The revenue of the orphan-houſe alone is ſaid to amount to between 50 and 60,000 l. There is a large ſumptuous hoſpital for receiving poor travellers that fall ſick. In one of their work-houſes or houſes of correction, thoſe who have not performed their taſk are hoiſted up in a baſket over the table in the common-hall while the reſt are at dinner, that they may be tantalized with the ſight and ſmell of what they cannot taſte. The eſtabliſhed religion of Hamburg is Lutheraniſm; as for the Calviniſts and the Roman-catholics, they go to the ambaſſadors chapels to celebrate their divine ſervice and worſhip. They have here what they call *a private confeſſion*, previous to the holy communion, which differs in nothing from that of the church of England, and the abſolution is the ſame, only the pooreſt of the people here are forced to give a fee to the prieſts on theſe occaſions. Their churches which are ancient large fabrics, are open thorough fares, and in ſome of them there are bookſellers ſhops. The pulpit of St Catherine's is of marble, curiouſly carved and adorned with figures and other ornaments of gold; and its organ, reckoned one of the beſt in Europe, has 6000 pipes. The cathedral is very ancient, and its tower leans as if juſt going to fall; yet on account of the ſingularity and beauty of its architecture, the danger attending it has been hitherto overlooked. There are ſtill a dean and chapter belonging to this church, though ſecularized; from whoſe court there lies no appeal, but to the imperial chamber at Wetzlar. The chamber conſiſts of a provoſt, dean, 13 canons, eight minor canons, and 30 *vicarii immunes*, beſides others who are under the juriſdiction of the city. The cathedral, with the chapter, and a number of houſes belonging to them, are under the immediate protection of his Britannic majeſty as duke of Bremen, who diſpoſes of the prebends that fall in ſix months of the year, not ſucceſſively, but alternately with the chapter. Hamburg is almoſt of a circular form, and ſix miles in compaſs. It has ſix gates, and three entrances by water, viz. two from the Elbe and one from the Alſter, being divided into the old and new, which are ſtrongly fortified with moats, ramparts, baſtions, and out-works. The ramparts are very lofty, and planted with trees; and of ſuch a breadth, that ſeveral carriages may go a-breaſt. In the New-town, towards Altena, are ſeveral ſtreets of mean houſes inhabited by Jews. Through that entrance from the Elbe, called the *lower Baum*, paſs all ſhips going to or coming from ſea. Every morning, at the opening of it, is ſeen a multitude of boats or ſmall barks, whoſe cargoes conſiſt of milk, fruits, and all kinds of proviſions, ruſhing in at the ſame time. There are ſome fine chimes here, eſpecially thoſe of St Nicholas, which play every morning early, at one o'clock in the afternoon, and on all feſtivals and ſolemnities. The other public ſtructures in this city, beſides the churches, make no great appearance: however, the yard, arſenal, and two armories, are well worth ſeeing. There are ſeveral convents or cloiſters ſtill remaining; which having been ſecularized, are now poſſeſſed by the Lutherans. One of them holds its lands by this tenure, "That they offer a glaſs of wine to every malefactor who is carried by it for execution." There is a fine exchange, though inferior to that of London. It is the cuſtom of Hamburg, that a citizen, when he dies, muſt leave the tenth of his eſtate to the city; and foreigners not naturalized, muſt pay a certain ſum annually for liberty to trade. The common carts here are only a long pulley laid upon an axle-tree between two wheels, and drawn not by horſes, but by men, of whom a dozen or more are ſometimes linked to theſe machines, with ſlings acroſs their ſhoulders. Such of the ſenators, principal elders, divines, regular phyſicians, and graduates in law, as aſſiſt at funerals, have a fee. The hangman's houſe is the common priſon for all malefactors; on whom ſentence is always paſſed on Friday, and on Monday they are executed. As, by their laws, no criminal is puniſhable unleſs he plead guilty, they have five different kinds of torture to extort ſuch confeſſion. The government of this city is lodged in the ſenate and three colleges of burghers. The former is veſted with almoſt every act of ſovereignty, except that of laying taxes and managing the finances, which are the prerogatives of the latter. The magiſtracy is compoſed of four burgomaſters, four ſyndics, and 24 aldermen, of whom ſome are lawyers and ſome merchants. Any perſon elected into the magiſtracy, and declining the office muſt depart the place. No burgher is admitted into any of the colleges, unleſs he dwells in a houſe of his own within the city, and is poſſeſſed of 1000 rixdollars in ſpecie, over and above the ſum for which the houſe has been mortgaged; or 200 in moveable goods, within the juriſdiction of the ſame. For the adminiſtration of juſtice, here are ſeveral inferior courts, from which an appeal lies to the Obergericht, or high court, and from that to the aulic council and other imperial colleges. For naval cauſes here is a court of admiralty, which, jointly with the city-treaſury, is alſo charged with the care of the navigation of the Elbe, from the city to the river's mouth. In conſequence of this, 100 large buoys, ſome white, others black, are kept conſtantly floating in the river in ſummer; but in winter, inſtead of ſome of them, there are machines, like thoſe called *ice-beacons*, to point out the ſhoals and flats. Subordinate to the admiralty is a company of pilots; and at the mouth of the Elbe is, or at leaſt ought to be, a veſſel always riding, with pilots ready to put on board the ſhips. At the mouth of the river alſo is a good harbour, called *Cuxhaven*, belonging to Hamburg; a light-houſe; and ſeveral beacons, ſome of them very large. For defraying the expence of theſe, certain tolls and duties were formerly granted by the emperors to the city. Beſides the Elbe, there is a canal by which a communication is opened with the Trave, and thereby with Lubeck and the Baltic, without the hazard, trouble, and expence, of going about by the Sound. The trade of Hamburg is exceedingly great, in exporting all the commodities and manufactures of the ſeveral cities and ſtates of Germany, and ſupplying them with whatever they want from abroad. Its exports conſiſt of linens of ſeveral ſorts and countries; as lawns, diapers, Oſnaburgs, dowlas, &c. linen-yarn, tin-plates, iron, braſs, and ſteel-wire, clap-board, pipe-ſtaves, wainſcot-boards, oak-plank, and timber, kid ſkins, corn, beer in great quantities, with flax, honey, wax, aniſeed, linſeed, drugs, wine, tobacco, and metals. Its principal imports are the woollen manufactures and other goods of Great Britain, to the amount of ſeveral hundred thouſand pounds a year: they have alſo a great trade with Spain, Portugal, and Italy, which is carried on moſtly in Engliſh bottoms, on account of their Mediterranean paſſes. Their whale-fiſhery is alſo very conſiderable, 50 or 60 ſhips being generally ſent out every year in this trade. Add to theſe a variety of manufactures, which are performed here with great ſucceſs; the chief of which are, ſugar-baking, calico-printing, the weaving of damaſks, brocades, velvets, and other rich ſilks. The inland trade of Hamburg is ſuperior to that of any in Europe, unleſs perhaps we ſhould except that of Amſterdam and London. There is a paper publiſhed here at ſtated times called the *Preiſcourant*, ſpecifying the courſe of exchange, with the price which every commodity and merchandiſe bore laſt upon the exchange. There is alſo a board of trade, erected on purpoſe for the advancing every project for the improvement of commerce. Another great advantage to the merchants is, the bank eſtabliſhed in 1619, which has a flouriſhing credit. To ſupply the poor with corn at a low price, here are public granaries, in which great quantities of grain are laid up. By charters from ſeveral emperors, the Hamburgers have a right of coinage, which they actually exerciſe. The Engliſh merchants, or, *Hamburg Company*, as it is called, enjoy great privileges; for they hold a court with particular powers, and a juriſdiction among themſelves, and have a church and miniſter of their own.— This city has a diſtrict belonging to it of conſiderable extent, which abounds with excellent paſtures, intermixed with ſeveral large villages and noblemens ſeats. A ſmall bailiwic, called *Bergekorf*, belongs to this city and Lubeck. Though Hamburg has an undoubted right to a ſeat in the diet of the empire, yet as ſhe pays no contributions to the military cheſt in time of war, and is alſo unwilling to draw upon herſelf the reſentment of Denmark, ſhe makes no uſe of that privilege. There is a *ſchola illuſtris* or gymnaſium here, well endowed, with ſix able profeſſors, who read lectures in it as at the univerſities. There are alſo ſeveral free ſchools, and a great number of libraries, public and private. The public cellar of this town has always a prodigious ſtock and vent of old hock, which brings in a conſiderable revenue to the ſtate. Beſides the militia or trained bands, there is an eſtabliſhment of regular forces, conſiſting of 12 companies of infantry, and one troop of dragoons, under the commandant, who is uſually a foreigner, and one who has diſtinguiſhed himſelf in the ſervice. There is alſo an artillery company, and a night-guard; the laſt of which is poſted at night all over the city, and calls the hours.

HAMEL (John Baptiſte du), a very learned French philoſopher and writer in the 17th century. At 18 he wrote a treatiſe, in which he explained in a very ſimple manner Theodoſius's three books of Spherics; to which he added a tract upon trigonometry, extremely perſpicuous, and deſigned as an introduction to aſtronomy. Natural philoſophy, as it was then taught, was only a collection of vague, knotty, and barren queſtions; when our author undertook to eſtabliſh it upon right principles, and publiſhed his *Aſtronomia Phyſica*. In 1666 Mr Colbert propoſed to Louis XIV. a ſcheme, which was approved of by his majeſty, for eſtabliſhing a royal academy of ſciences;

and appointed our author ſecretary of it. He publiſhed a great many books; and died at Paris in 1706, of mere old age, being almoſt 83. He was regius profeſſor of philoſophy, in which poſt he was ſucceeded by M. Varignon. He wrote Latin with purity and elegance.

HAMELIN, a ſtrong town of Germany, in the duchy of Calemberg in Lower Saxony. It is ſituated at the extremity of the duchy of Brunſwick, to which it is the key, near the confluence of the rivers Hamel and Weſer, in E. Long. 9. 55. N. Lat. 52. 13.

HAMELLIA, in botany: a genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is quinquefid; the berry quinquelocular, inferior, polyſpermous.

HAMESECKEN, Burglary, or *Nocturnal Houſe-breaking*, was by the ancient Engliſh law called *Hameſecken*, as it is in Scotland to this day.—Violating the privilege of a man's houſe in Scotland is as ſeverely puniſhed as raviſhing a woman.

HAMI, or Ha-mi, a country of Aſia, ſubject to the Chineſe. It is ſituated to the north-eaſt of China, at the extremity of that deſert which the Chineſe call *Chamo*, and the Tartars *Cobi*; and is only 20 leagues diſtant from the moſt weſterly point of the province of Chenſi. This country was inhabited in the early ages by a wandering people, named *Iong*. About the year 950 before the Chriſtian era, they ſent deputies to pay homage to the emperor of China, and preſented ſome ſabres by way of tribute. The civil wars by which China was torn about the end of the dynaſty of Tcheou having prevented aſſiſtance from being ſent to theſe people, they fell under the dominion of the Hiongnou, who appear to have been the ſame as the Huns, and who at that time were a formidable nation. The Chineſe ſeveral times loſt and recovered the country of Hami. In 131 (the ſixth year of the reign of Chunty, of the dynaſty of the eaſtern Han), the emperor kept an officer there in quality of governor. Under the following dynaſties, the ſame viciſſitudes were experienced: Hami was ſometimes united to the province of Chenſi, ſometimes independent of it, and ſometimes even of the whole empire. The ſituation of theſe people (ſeparated by vaſt deſerts from China, to which, beſides, they had no relation, either in language, manners, or cuſtoms) muſt have greatly contributed to facilitate theſe revolutions. All the tributary ſtates of the empire having revolted in 610, that of Hami followed their example; but it again ſubmitted to the yoke, under Tai-tſong, ſecond emperor of the dynaſty of Tang, who had ſent one of his generals with an army to reduce it. This great prince paid particular attention to his new conqueſt. He divided it into three diſtricts, and connected its civil and military government in ſuch a manner to that of the province of Chenſi and other neighbouring countries, that tranquillity prevailed there during his reign and ſeveral of thoſe that followed. Through Hami all the caravans which went from the weſt to China, or from China to the weſt, were obliged to paſs. The emperors, predeceſſors of Tai-tſong, were ſatisfied with cauſing wine to be tranſported from Hami in ſkins carried by camels; but "Tai-tſong (ſays the Chineſe hiſtory) having ſubdued the kingdom of Hami, ordered ſome vine-plants of the ſpecies called *majou*, to be brought him, which he cauſed to be planted in his gardens; he, beſides, learned the manner of making wine, the uſe of which proved both ſerviceable and hurtful to him." Luxury and effeminacy having weakened the dynaſty of Tang, the Mahometans (who had made a rapid progreſs in all the countries that are ſituated between Perſia, Cobi, and the Caſpian ſea) advanced as far as Hami, which they conquered. It appears, that this country afterwards had princes of its own, but dependent on the Tartars, who ſucceſſively ruled theſe immenſe regions. The Yuen or Mogul Tartars again united the country of Hami to the province of Chenſi; and this reunion ſubſiſted until 1360, at which time the emperor formed it into a kingdom, on conditon of its princes doing homage and paying tribute. The king of Hami was honoured with a new title in 1404, and obtained a golden ſeal. After a conteſt of ſeveral years for the ſucceſſion to the throne, the kingdom of Hami fell a prey to the king of Tou-eulh-fan. This yoke ſoon became uneaſy to the people of Hami: they revolted from their new maſters, and made conqueſts from them in their turn. The new king whom they made choice of, did not long poſſeſs the throne: he was conquered and killed in a bloody battle which he fought with the king of Tou-eulh-fan, who alſo periſhed ſome time after. Since this epocha, the country of Hami has been ſucceſſively expoſed to anarchy, or governed by its own princes. The prince who filled the throne in 1696, acknowledged himſelf a vaſſal of the empire, and ſent as tribute to Peking, camels, horſes, and ſabres. Kang-hi received his homage with the uſual ceremonies, and publiſhed a diploma, which eſtabliſhed the rank that the king of Hami ſhould hold among the tributary princes, the time when he ſhould come to render homage, the nature of the preſents neceſſary for his tribute, the number of auxiliaries he was bound to furniſh in time of war, and the manner of his appointing a ſucceſſor. All theſe regulations have ſubſiſted till this time.

The country of Hami, though ſurrounded by deſerts, is accounted one of the moſt delightful in the world. The ſoil produces abundance of grain, fruits, leguminous plants, and paſture of every kind. The rice which grows here is particularly eſteemed in China; and pomegranates, oranges, peaches, raiſins, and prunes, have a moſt exquiſite taſte; even the jujubes are ſo juicy, and have ſo delicious a flavour, that the Chineſe call them *perfumed jujubes*. There is no fruit more delicate or more in requeſt than the melons of Hami, which are carried to Peking for the emperor's table. Theſe melons are much more wholeſome than thoſe of Europe; and have this ſingular property, that they may be kept freſh during great part of the winter.—But the moſt uſeful and moſt eſteemed production of this country is its dried raiſins. Theſe are of two kinds: The firſt, which are much uſed in the Chineſe medicine, ſeem to have a perfect reſemblance to thoſe known in Europe by the name of Corinthian. The ſecond, which are in much greater requeſt for the table, are ſmaller and more delicate than thoſe of Provence. The Chineſe authors perfectly agree with Meſſrs Lemery and Geoffroy, reſpecting the virtue and qualities of theſe dried grapes or raiſins; but they attribute

tribute ſo much more efficacy to thoſe of Hami than to thoſe of China, that they preſcribe them in ſmaller doſes. They obſerve, that an infuſion of the firſt is of great ſervice in facilitating an eruption of the ſmall pox about the fourth day, when the patient either is or ſeems to be too weak; and to promote a gentle perſpiration in ſome kinds of pleuriſies or malignant fevers. The doſe muſt be varied according to the age, habit of body, and ſtrength of the patient; great care muſt be taken to adminiſter this remedy ſeaſonably and with judgment. The emperor cauſed plants to be tranſported from Hami to Peking, which were immediately planted in his gardens. As thoſe plants were cultivated with extraordinary care, under his own eyes, they have perfectly ſucceeded. The raiſins produced by them are exceedingly ſweet, and have a moſt exquiſite flavour.

Although the country of Hami (the latitude of which is 42° 53′ 20″) lies farther towards the north than ſeveral of the provinces of France, we are aſſured that its climate is more favourable to the culture of vines, and that it gives a ſuperior degree of quality to the grapes. It never rains at Hami; even dew and fogs are ſcarcely ever ſeen there; the country is watered only by the ſnow which falls in winter, and by the water of this ſnow when melted, which is collected at the bottoms of the mountains, and preſerved with great care and induſtry. The method of drying grapes in Hami is much ſimpler than that practiſed in the provinces of China. The people of Chenſi hold them over the ſteam of hot wine, and even ſometimes boil them a few ſeconds in wine in which a little clarified honey has been diluted. In the kingdom of Hami they wait until the grapes are quite ripe; they then expoſe them to the ſcorching rays of the ſun: afterwards pick them, and leave them in that manner until they are quite dry. However dry theſe grapes may be, they become ſhrivelled, without loſing any of their ſubſtance, and without growing flat: good raiſins ought to be almoſt as criſp as ſugar-candy.

The kingdom of Hami contains a great number of villages and hamlets; but it has properly only one city, which is its capital, and has the ſame name. It is ſurrounded by lofty walls, which are half a league in circumference, and has two gates, one of which fronts the eaſt, and the other the weſt. Theſe gates are exceedingly beautiful and make a fine appearance at a diſtance. The ſtreets are ſtraight, and well laid out; but the houſes (which contain only a ground-floor, and which are almoſt all conſtructed of earth) make very little ſhow: however, as this city enjoys a ſerene ſky, and is ſituated in a beautiful plain, watered by a river, and ſurrounded by mountains which ſhelter it from the north winds, it is a moſt agreeable and delightful reſidence. On whatever ſide one approaches it, gardens may be ſeen which contain every thing that a fertile and cultivated ſoil can produce in the mildeſt climates. All the ſurrounding fields are enchanting: but they do not extend far; for on ſeveral ſides they terminate in dry plains, where a number of beautiful horſes are fed, and a ſpecies of excellent ſheep, which have large flat tails that ſometimes weigh three pounds. The country of Hami appears to be very abundant in foſſils and valuable minerals: the Chineſe have for a long time procured diamonds and a great deal of gold from it; at preſent it ſupplies them with a kind of agate, on which they ſet a great value. With regard to the inhabitants of this ſmall ſtate, they are brave, capable of enduring fatigue, very dextrous in bodily exerciſes, and make excellent ſoldiers, but they are fickle and ſoon irritated, and when in a paſſion they are extremely ferocious and ſanguinary.

HAMILTON, a town of Scotland, in Clydeſdale, ſeated on the river Clyde, eleven miles ſouth eaſt of Glaſgow; from whence the noble family of Hamilton take their name, and title of duke. The town is ſeated in the middle of a very agreeable plain; and on the weſt of the town this family has a large park, which is near ſeven miles in circumference, incloſed with a high wall, full of deer and other game. The rivulet called *Avon* runs through the park, and falls into the river Clyde, over which laſt there is a bridge of Free-ſtone. W. Long. 3. 50. N. Lat. 55. 40. The original name of this place, or the lands about it, was *Cadzow* or *Cadyow*, a barony granted to an anceſtor of the noble owner, on the following occaſion. In the time of Edward II. lived *Sir Gilbert de Hamilton*, or *Hampton*, an Engliſhman of rank; who happening at court to ſpeak in praiſe of Robert Bruce, received on the occaſion an inſult from John de Spenſer, chamberlain to the king, whom he fought and ſlew. Dreading the reſentment of that potent family, he fled to the Scottiſh monarch; who received him with open arms, and eſtabliſhed him at the place poſſeſſed by the duke of Hamilton. In aftertimes the name was changed from *Cadzow* to *Hamilton*; and in 1445 the lands were erected into a lordſhip, and the then owner Sir James ſat in parliament as lord Hamilton. The ſame nobleman founded the collegiate church at Hamilton in 1451, for a provoſt and ſeveral prebendaries. The endowment was ratified at Rome by the pope's bull, which he went in perſon to procure.—Hamilton-houſe or palace is at the end of the town; a large diſagreeable pile, with two deep wings at right angles with the centre; the gallery is of great extent; and, furniſhed, as well as ſome other rooms, with moſt excellent paintings.

HAMILTON (Anthony, count), deſcended from a noble family in Scotland, was born in Ireland, and ſettled in France. He wrote ſeveral poetical pieces; and was the firſt who compoſed romances in an agreeable taſte, without imitating the burleſque of Scarron. He is alſo ſaid to be the author of the *Memoirs of the count de Grammont*, one of the beſt written pieces in the French language. His works were printed in 6 vols 12mo. He died at St Germaine-en-Laye, in 1720.

HAMILTON (George), earl of Orkney, and a brave warrior, was the fifth ſon of William earl of Selkirk, and early betook himſelf to the profeſſion of arms. Being made colonel in 1689-90, he diſtinguiſhed himſelf by his bravery at the battle of the Boyne; and ſoon after, at thoſe of Aghrim, Steinkirk, and Landen, and at the ſieges of Athlone, Limerick, and Namur. His eminent ſervices in Ireland and Flanders, through the whole courſe of that war, recommendeded him ſo highly to king William III. that, in 1696, he advanced him to the dignity of a peer of Scotland, by the title of *earl of Orkney*; and his lady, the ſiſter of Edward viſcount Villiers, afterwards earl of Jerſey, had a grant made to her, under the great ſeal of Ireland, of almoſt all the private eſtates of the late king James, of very conſiderable value.

Upon the acceſſion of queen Anne to the throne, he was promoted to the rank of major-general in 1702, and the next year to that of lieutenant-general, and was likewiſe made knight of the thiſtle. His lordſhip afterwards ſerved under the great duke of Marlborough; and contributed by his bravery and conduct to the glorious victories of Bleinhim and Malplaquet, and to the taking of ſeveral of the towns in Flanders.

In the beginning of 1710, his lordſhip, as one of the 16 peers of Scotland, voted for the impeachment of Dr Sacheverel; and the ſame year was ſworn of the privy-council, and made general of the foot in Flanders. In 1712, he was made colonel of the royal regiment of fuzileers, and ſerved in Flanders under the duke of Ormond. In 1714, he was appointed gentleman-extraordinary of the bed-chamber to king George I. and afterwards governor of Virginia. At length he was appointed conſtable, governor, and captain of Edinburgh caſtle, lord-lieutenant of the county of Clydeſdale, and field-marſhall. He died at his houſe in Albemarle-ſtreet. in 1737.

HAMILTON (John), the 24th biſhop of St Andrew's, to which he was tranſlated from Dunkeld. He was natural ſon of James the firſt earl of Arran, and was in great favour at court whilſt his friends remained in power. He was one of queen Mary's privy council, and a ſteady friend to that unfortunate princeſs. He performed the ceremony of chriſtening her ſon, and was at different times lord privy ſeal and lord treaſurer. The queen had reaſon to lament her not following the advice of this prelate, after the fatal battle of Langſide, *viz.* not to truſt her perſon in England. By the regent earl of Murray, he was declared a traitor, and obliged to ſeek ſhelter among his friends. He was unfortunately in the caſtle of Dumbarton when that fortreſs was taken by ſurpriſe, from whence he was carried to Stirling, where on April 9. 1570 he was hanged on a live tree. The two following ſarcaſtic verſes were written upon this occaſion;

Vive diu, felix arbor, ſemperque virete.
Frondibus, ut nobis talia poma feras.

HAMLET, HAMEL, or *Hæmpſel*, (from the Saxon *ham.* i. e. *domus*, and the German *let*, i.e. *membrum*), ſignifies a little village, or part of a village or pariſh; of which three words the firſt is now only uſed, though Kitchen mentions the two laſt. By Spelman there is a difference between *villam integram, villam dimidiam*, and *hamletam*; and Stow expounds it to be the ſeat of a freeholder. Several county-towns have hamlets, as there may be ſeveral hamlets in a pariſh; and ſome particular places may be out of a town or hamlet, though not out of the county.

HAMLET, a prince celebrated in the annals of Denmark; and whoſe name has been rendered familiar in this country, and his ſtory intereſting, by being the ſubject of one of the nobleſt tragedies of the immortal Shakeſpeare.—Adjoining to a royal palace, which ſtands about half a mile from that of Cronborg in Elſineur, is a garden, which, Mr Coxe informs us, is called Hamlet's Garden, and is ſaid by tradition to be the very ſpot where the murder of his father was perpetrated. The houſe is of modern date, and is ſituated at the foot of a ſandy ridge near the ſea. The garden occupies the ſide of the hill, and is laid out in terraſſes riſing one above another. Elſineur is the ſcene of Shakeſpeare's Hamlet; and the original hiſtory from which our poet derived the principal incidents of his play is founded upon facts, but ſo deeply buried in remote antiquity that it is difficult to diſcriminate truth from fable. Saxo-Grammaticus, who flouriſhed in the 12th century, is the earlieſt hiſtorian of Denmark that relates the adventures of Hamlet. His account is extracted, and much altered, by Belleforeſt a French author; an Engliſh tranſlation of whoſe romance was publiſhed under the title of the Hiſtorye of Hamblet: and from this tranſlation Shakeſpeare formed the ground-work of his play, though with many alterations and additions. The following ſhort ſketch of Hamlet's hiſtory, as recorded in the Daniſh annals, will enable the reader to compare the original character with that delineated by Shakeſpeare.

Long before the introduction of Chriſtianity into Denmark, Horwendillus, prefect or king of Jutland, was married to Geruthra, or Gertrude, daughter of Ruric king of Denmark, by whom he had a ſon called *Amlettus*, or *Hamlet*. Fengo murders his brother Horwendillus, marries Gertrude, and aſcends the throne. Hamlet, to avoid his uncle's jealouſy, counterfeits folly; and is repreſented as ſuch an abhorrer of falſehood, that though he conſtantly frames the moſt evaſive and even abſurd anſwers, yet artfully contrives never to deviate from truth. Fengo, ſuſpecting the reality of his madneſs, endeavours by various methods (A) to diſcover the real ſtate of his mind: amongſt others, he departs from Elſineur, concerts a meeting between Hamlet and Gertrude, concluding that the former would not conceal his ſentiments from his own mother and

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(A) Among other attempts, Fengo orders his companions to leave him in a retired ſpot, and a young woman is placed in his way, with a view to extort from him a confeſſion that his folly was counterfeited. Hamlet would have fallen into the ſnare, if a friend had not ſecretly conveyed to him intelligence of this treachery. He carries the woman to a more ſecret place, and obtains her promiſe not to betray him; which ſhe readily conſents to, as ſhe had been brought up with him from her infancy. Being aſked, upon his return home, if he had indulged his paſſion, he anſwers in the affirmative; but renders himſelf not believed by the moſt artful ſubterfuges, which, though true, ſeemed evidently to mark a diſordered underſtanding, and by the poſitive denial of the woman. "Upon this woman," as Capell obſerves, "is grounded Shakeſpeare's Ophelia: and his deliverance from this ſnare by a friend ſuggeſted his Horatio:"—"the rude outlines," as Mr Malone remarks, "of thoſe characters. But in this piece there are no traits of the character of Polonius; there is indeed a counſellor, and he places himſelf in the queen's chamber behind the arras; but this is the whole. The ghoſt of the old Hamlet is likewiſe the offspring of our author's creative imagination." See *Capell's School of Shakeſpeare*, vol. iii. p. 20.; and *Malone's Supplement*, p. 253.

and orders a courtier to conceal himſelf, unknown to both, for the purpoſe of overhearing their converſation. The courtier repairs to the queen's apartment, and hides himſelf under a heap of ſtraw (B). Hamlet, upon entering the cabinet, ſuſpecting the preſence of ſome ſpy, imitates, after his uſual affectation of folly, the crow of a cock, and, ſhaking his arms like wings, jumps (C) upon the heap of ſtraw; till, feeling the courtier, he draws his ſword, and inſtantly diſpatches him. He then cuts the body to pieces, boils it, and gives it to the hogs. He then avows to his mother that he only perſonated a fool, reproaches her for her inceſtuous marriage with the murderer of her huſband; and concludes his remonſtrances by ſaying, "Inſtead, therefore, of condoling my inſanity, deplore your own infamy, and learn to lament the deformity of your own mind (D)." The queen is ſilent; but is recalled to virtue by theſe admonitions. Fengo returns to Elſineur, ſends Hamlet to England under the care of two courtiers, and requeſts the king by a letter to put him to death. Hamlet diſcovers and alters the letter; ſo that, upon their arrival in England, the king orders the two courtiers to immediate execution, and betroths his daughter to Hamlet, who gives many aſtoniſhing proofs of a moſt tranſcendant underſtanding. At the end of the year he returns to Denmark, and alarms the court by his unexpected appearance; as a report of his death had been ſpread, and preparations were making for his funeral. Having re-aſſumed his affected inſanity, he purpoſely wounds his fingers in drawing his ſword, which the byſtanders immediately faſten to the ſcabbard. He afterwards invites the principal nobles to an entertainment, makes them intoxicated, and in that ſtate covers them with a large curtain, which he faſtens to the ground with wooden pegs: he then ſets fire to the palace; and the nobles, being enveloped in the curtain, periſh in the flames. During this tranſaction he repairs to Fengo's apartment; and, taking the ſword which lay by the ſide of his bed, puts his own in its place: he inſtantly awakens and informs him, that Hamlet is come to revenge the murder of his father. Fengo ſtarts from his bed, ſeizes the ſword; but, being unable to draw it, falls by the hand of Hamlet. The next morning, when the populace were aſſembled to view the ruins of the palace, Hamlet ſummons the remaining nobles; and in a maſterly ſpeech, which is too long to inſert in this place, lays open the motives of his own conduct, proves his uncle to have been the aſſaſſin of his father; and concludes in the following words, "Tread upon the aſhes of the monſter, who, polluting the wife of his murdered brother, joined inceſt to parricide; and ruled over you with the moſt oppreſſive tyranny. Receive me as the miniſter of a juſt revenge, as one who felt for the ſufferings of his father and his people. Conſider me as the perſon who has purged the diſgrace of his country; extinguiſhed the infamy of his mother; freed you from the deſpotiſm of a monſter, whoſe crimes, if he had lived, would have daily increaſed, and terminated in your deſtruction. Acknowledge my ſervices; and if I have deſerved it, preſent me with the crown. Behold in me the author of theſe advantages: no degenerate perſon, no parricide; but the rightful ſucceſſor to the throne, and the pious avenger of a father's murder. I have reſcued you from ſlavery, reſtored you to liberty, and re-eſtabliſhed your glory: I have deſtroyed a tyrant, and triumphed over an aſſaſſin. The recompence is in your hands: you can eſtimate the value of my ſervices, and in your virtue I reſt my hopes of reward." This ſpeech has the deſired effect: the greater part of the aſſembly ſhed tears, and all who are preſent unanimouſly proclaim him king amid repeated acclamations.

(B) The reader will recollect, that ſtraw uſed formerly to be ſpread over the floors as an article of great luxury.

(C) This part ſtands thus in the Engliſh account: "The counſellor entered ſecretly into the queene's chamber, and there hid himſelfe behind the arras, and long before the queene and Hamlet came thither: who being craftie and politique, as ſoone as he was within the chamber, doubting ſome treaſon, and fearing if he ſhould ſpeak ſeverely and wiſely to his mother touching his ſecret practices he ſhould be underſtood, and by that means intercepted, uſed his ordinary manner of diſſimulation, and began to come (r. crow) like a cocke, beating with his arms (in ſuch a manner as cockes uſed to ſtrike with their wings) upon the hangings of the chambers; whereby feeling ſomething ſtirring under them, he cried, *A rat! a rat!* and preſently drawing his ſworde, thruſt it into the hangings; which done, he pulled the counſellor (half deade) out by the heels, made an end of killing him; and, being ſlain, cut his body in pieces, which he cauſed to be boiled, and then caſt it into an open vault or privie." *Malone's Supplement*, vol. i. p. 357.

(D) The cloſet-ſcene, which is ſo beautiful in Shakeſpeare's Hamlet, is thus conciſely, but not leſs finely, deſcribed by the Daniſh hiſtorian; "Cumque mater magno ejulatu queſta præſentis filii ſocordiam deflere cœpiſſet: 'Quid (inquit) mulierum turpiſſima graviſſimi criminis diſſimulationem falſo lamenti genere expetis, quæ ſcorti more laſciviens nefariam ac deteſtabilem thori conditionem ſecuta viri tui interfectorem pleno inceſti ſinu amplecteris: et ei qui prolis tuæ parentem extinxerat obſcœniſſimis blandimentorum illecebris adularis. Ita nempe equæ conjugum ſuorum victoribus maritantur. Brutorum natura hæc eſt; ut in diverſa paſſim conjugia rapiantur; hoc tibi exemplo prioris mariti memoriam exoleviſſe conſtat. Ego vero non ab re ſtolidi ſpeciem gero, cum haud dubitem quin is qui fratrem oppreſſerit, in affines quoque pari crudelitate debacchaturus ſit: unde ſtoliditatis quæ induſtriæ habitum amplecti præſtat, et incolumitatis præſidium ab extremâ deliramentorum ſpecie mutuari. In animo tamen paternæ ultionis ſtudium perſeverat: ſed rerum occaſiones aucupor, temporum opportunitates opperior. Non idem omnibus locus competit. Contra obſcurum immitemque animum altioribus ingenii modis uti convenit. Tibi vero ſupervacuum ſit meam lamentari deſipientiam, quæ tuam juſtius ignominiam deplorare debueras. Itaque non aliene ſed propriæ mentis vitium defleas neceſſe eſt. Cætera ſilere memineris.' Tali convitio laceratam matrem ad excolendum virtutis habitum revocavit, præteritoſque ignes præſentibus illecebris præferre docuit."

Hamlet ſoon after his elevation ſails to England, and orders a ſhield to be made on which the principal actions of his life is repreſented. The king receives him with feigned demonſtrations of joy, falſely aſſures him that his daughter is dead, and recommends him to repair to Scotland as his ambaſſador, and to pay his addreſſes to the queen Hermetruda. He gives this inſidious advice with the hopes that Hamlet may periſh in the attempt; as the queen, who was remarkable for her chaſtity and cruelty, had ſuch an averſion to all propoſals of marriage, that not one of her ſuitors had eſcaped falling a ſacrifice to her vengeance. Hamlet, in oppoſition to all difficulties performed the embaſſy; and, by the aſſiſtance of his ſhield, which inſpires the lady with a favourable opinion of his wiſdom and courage, obtains her in marriage, and returns with her to England. Informed by the princeſs to whom he had been betrothed, that her father meditates his aſſaſſination, Hamlet avoids his fate by wearing armour under his robe; puts to death the king of England; and ſails to Denmark with his two wives, where he is ſoon afterwards killed in a combat with Vigletus ſon of Ruric. Hamlet, adds the hiſtorian, was a prince, who, if his good fortune had been equal to his deſerts, would have rivalled the gods in ſplendor, and in his actions would have exceeded even the labours of Hercules.

HAMMER, a well known tool uſed by mechanics, conſiſting of an iron head, fixed croſſwiſe upon a handle of wood. There are ſeveral ſorts of hammers uſed by blackſmiths; as, 1. The hand-hammer, which is of ſuch weight that it may be wielded or governed with one hand at the anvil. 2. The up-hand ſledge, uſed with both hands, and ſeldom lifted above the head. 3. The about-ſledge, which is the biggeſt hammer of all, and held by both hands at the fartheſt end of the handle; and being ſwung at arms length over the head, is made to fall upon the work with as heavy a blow as poſſible. There is alſo another hammer uſed by ſmiths, called a *rivetting hammer*; which is the ſmalleſt of all, and is ſeldom uſed at the forge unleſs upon ſmall work. —Carpenters and joiners have likewiſe hammers accommodated to their ſeveral purpoſes.

HAMMERING, the act of beating or extending and faſhioning a body under the hammer. When it is performed on iron heated for the purpoſe, the ſmiths uſually call it *forging*.

Hammering, in coining. A piece of money or a medal is ſaid to be hammered when ſtruck, and the impreſſion given with a hammer and not with a mill.

HAMMERSMITH, four miles weſt from London, is a hamlet belonging to Fulham, has two charity-ſchools, a workhouſe, a Preſbyterian meeting-houſe, and a fair May 1. There are a number of handſome ſeats about it, eſpecially towards the Thames; among which the moſt remarkable is the late lord Melcombe's, which is a very elegant houſe, and contains a marble gallery finiſhed at a very great expence.

HAMMOCK, or **Hamac**, a kind of hanging bed, ſuſpended between two trees, poſts, hooks, or the like, much uſed throughout the Weſt-Indies, as alſo on board of ſhips. The Indians hang their hammocks to trees, and thus ſecure themſelves from wild beaſts and inſects, which render lying on the ground there very dangerous. According to F. Plumier, who has often made uſe of the hammock in the Indies, it conſiſts of a large ſtrong coverlet or ſheet of coarſe cotton, about ſix feet ſquare: on two oppoſite ſides are loops of the ſame ſtuff, through which a ring is run, and thereof other loops are formed, all which are tied together with a cord: and thus is the whole faſtened to two neigbouring trees in the field, or two hooks in houſes. This kind of couch ſerves at the ſame time for bed, quilts, ſheets, pillow, &c.

The hammock uſed on board of ſhips is made of a piece of canvas ſix feet long and three feet wide, gathered or drawn together at the two ends. There are uſually from fourteen to twenty inches in breadth allowed between decks for every hammock in a ſhip of war; but this ſpace muſt in ſome meaſure depend on the number of the crew, &c. In time of battle the hammocks and bedding are firmly corded and fixed in the nettings on the quarter-deck, or wherever the men are too much expoſed to the view or fire of the enemy.

HAMMOND (Henry), D. D. one of the moſt learned Engliſh divines in the 17th century, was born in 1605. He ſtudied at Oxford, and in 1629 entered into holy orders. In 1633 he was inducted into the rectory of Penſhurſt in Kent. In 1643 he was made archdeacon of Chicheſter. In the beginning of 1645 he was made one of the canons of Chriſt-church, Oxford, and chaplain in ordinary to king Charles I. who was then in that city; and he was alſo choſen public orator of the univerſity. In 1657 he attended the king in his confinement at Woodburn, Caveſham, Hampton-Court, and the Iſle of Wight, where he continued till his majeſty's attendants were again put from him. He then returned to Oxford, where he was choſen ſub-dean; and continued there till the parliament-viſitors firſt ejected him, and then impriſoned him for ſeveral weeks in a private houſe in Oxford. During this confinement he began his Annotations on the New Teſtament. At the opening of the year 1660, when every thing viſibly tended to the reſtoration of the royal family, the doctor was deſired by the biſhops to repair to London to aſſiſt there in the compoſure of the breaches of the church, his ſtation in which was deſigned to be the biſhopric of Worceſter; but on the 4th of April he was ſeized by a fit of the ſtone, of which he died on the 25th of that month, aged 55. Beſides the above work, he wrote many others; all of which have been publiſhed together in four volumes folio.

Hammond (Anthony, Eſq;). an ingenious Engliſh poet, deſcended from a good family of Somerſham Place in Huntingdonſhire, was born in 1668. After a liberal education at St John's college, Cambridge, he was choſen member of parliament, and ſoon diſtinguiſhed himſelf as a fine ſpeaker. He became a commiſſioner of the royal navy, which place he quitted in 1712. He publiſhed A Miſcellany of original Poems by the moſt eminent hands; in which himſelf, as appears by the poems marked with his own name, had no inconſiderable ſhare. He wrote the Life of Walter Moyle, Eſq; prefixed to his works. He was the intimate friend of that gentleman, and died about the year 1726.

Hammond (James), known to the world by the Love-Elegies which, ſome years after his death, were pub-

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liſhed by the earl of Cheſterfield, was the ſon of Anthony Hammond abovementioned, and was preferred to a place about the perſon of the late prince of Wales, which he held till an unfortunate accident deprived him of his ſenſes. The cauſe of this calamity was a paſſion he entertained for a lady, who would not return it: upon which he wrote thoſe love-elegies which have been ſo much celebrated for their tenderneſs. The editor obſerves, that he compoſed them before he was 21 years of age: a period, ſays he, when fancy and imagination commonly riot at the expence of judgment and correctneſs. He was ſincere in his love as his friendſhip; and wrote to his miſtreſs, as he ſpoke to his friends, nothing but the genuine ſentiments of his heart. Tibullus ſeems to have been the model our author judiciouſly preferred to Ovid; the former writing directly from the heart to the heart, the latter too often yielding and addreſſing himſelf to the imagination. Mr Hammond died in the year 1743, at Stow, the ſeat of lord Cobham, who, as well as the earl of Cheſterfield, honoured him with a particular intimacy.

HAMPSHIRE, or Haunts, a county of England, bounded on the weſt by Dorſetſhire and Wiltſhire, on the north by Berkſhire, on the eaſt by Surry and Suſſex, and on the ſouth by the Engliſh channel. It extends 55 miles in length from north to ſouth, and 40 in breadth from eaſt to weſt, and is about 220 miles in circumference. It is divided into 39 hundreds, and contains 9 foreſts, 29 parks, one city, 20 market-towns, 253 pariſhes, above 36,000 houſes, and by the moſt modeſt computation 180,000 inhabitants, who elect 26 members of parliament, two for the county, two for the city of Wincheſter, and two for each of the following towns, Southampton, Portſmouth, Petersfield, Yarmouth, Newport, Stockbridge, Andover, Whitchurch, Lymington, Chriſt-church, and Newton. —The air is very pure and pleaſant, eſpecially upon the downs, on which vaſt flocks of ſheep are kept and bred. In the champaign part of the county, where it is free of wood, the ſoil is very fertile, producing all kinds of grain. The country is extremely well wooded and watered; for beſides many woods on private eſtates, in which there are vaſt quantities of well-grown timber, there is the new foreſt of great extent, belonging to the crown, well ſtored with venerable oaks. In theſe woods and foreſts, great numbers of hogs run at large, and feed on the acorns; and hence it is that the Hampſhire bacon ſo far excels that of moſt other countries. The rivers are the Avon, Anton, Arle, Teſt, Stowre, and Itchin; beſides ſeveral ſmaller ſtreams, all abounding in fiſh, eſpecially trout. As its ſea-coaſt is of a conſiderable extent, it poſſeſſes many good ports and harbours, and is well ſupplied with ſalt-water fiſh. Much honey is produced in the country, and a great deal of mead and metheglin made. Here is alſo plenty of game, and on the downs is moſt delightful hunting. The manufacture of cloth and kerſies in this county, though not ſo extenſive as that of ſome others, is yet far from being inconſiderable, and employs great numbers of the poor, as well as contributes to the enriching of the manufacturers by what is ſent abroad. The new intended canal in this county, from Baſingſtroke to the Wye in Surry, and from thence to the Thames, cannot but be a great advantage to the county in general, and the pariſhes it is to paſs through in particular; to carry which into execution above L.86,000 have been raiſed amongſt 150 proprietors in 1789, and it will extend 53 miles when completed.

New HAMPSHIRE, a ſtate of North America, in New England. It is bounded on the north by Quebec; north-eaſt by the province of Main; ſouth-eaſt by the Atlantic Ocean; ſouth by Maſſachuſets; weſt and north-weſt by Connecticut river, which divides it from Vermont. The ſhape of New Hampſhire reſembles an open fan; Connecticut river being the curve, the ſouthern line the ſhorteſt, and the eaſtern line the longeſt ſide. It is divided into five countries, viz. Rockingham, Stafford, Hillſborough, Cheſhire, Grafton. In 1776, there were 165 ſettled townſhips in this ſtate. Since that time the number has been greatly increaſed. The chief town is PORTSMOUTH. Exeter, 15 miles ſouthweſtwardly from Portſmouth, is a pretty town on the ſouth ſide of the Exeter river. And Concord, ſituated on the weſt ſide of Merrimak river, is a pleaſant flouriſhing town, which will probably, on account of its central ſituation, ſoon be the permanent ſeat of government. There are two great rivers, the Piſcata and the Merrimak. The former has four branches, Berwick, Cochechy, Exeter, and Durham, which are all navigable for ſmall veſſels and boats, ſome 15 others 20 miles from the ſea. Theſe rivers unite about eight miles from the mouth of the harbour, and form one broad, deep, rapid ſtream, navigable for ſhips of the largeſt burden. This river forms the only port of New Hampſhire. The Merrimak bears that name from its mouth to the confluence of Pemigewaſſet and Winniſipiokee rivers; the latter has its ſource in the lake of the ſame name. In its courſe, it receives numberleſs ſmall ſtreams iſſuing from ponds and ſwamps in the valleys. It tumbles over two conſiderable falls, Amaſkaeg and Pantucket great falls. From Haveril the river runs winding along, through a pleaſant rich vale of meadow, and paſſing between Newbury Port and Saliſbury empties itſelf into the ocean. The land next to the ſea is generally low; but as you advance into the country, it riſes into hills. Some parts of the ſtate are mountainous. The White mountains are the higheſt part of a ridge which extends northeaſt and ſouthweſt to a length not yet aſcertained. The whole circuit of them is not leſs than 50 miles. The height of theſe mountains above an adjacent meadow, is reckoned to be about 5500 feet, and the meadow is 3500 feet above the level of the ſea. The ſnow and ice cover them nine or ten months in the year; during which time they exhibit that bright appearance from which they are denominated the *white mountains*. From this ſummit in clear weather is exhibited a noble view, extending 60 or 70 miles in every direction. Although they are more than 70 miles within land, they are ſeen many leagues off at ſea, and appear like an exceeding bright cloud in the horizon. Theſe immenſe heights, being copiouſly replenished with water, afford a variety of beautiful caſcades. Three of the largeſt rivers in New England receive a great part of their waters from theſe mountains. Amanooſuck and Iſrael rivers, two principal branches of Connecticut, fall from their weſtern ſide. Peabody river, a branch of the Amariſcogen, falls from the northeaſt ſide; and almoſt the whole of the

Saco deſcends from the ſouthern ſide. The higheſt ſummit of theſe mountains is about latitude 44°.

The air in New Hampſhire is ſerene and healthful. The weather is not ſo ſubject to change as in more ſouthern climates. This ſtate emboſoming a number of very high mountains, and lying in the neighbourhood of others whoſe towering ſummits are covered with ſnow and ice three quarters of the year, is intenſely cold in the winter ſeaſon. The heat of ſummer is great, but of ſhort duration. The cold braces the conſtitution, and renders the labouring people healthful and robuſt.

On the ſea coaſt, and many places inland, the ſoil is ſandy, but affords good paſturage. The intervals at the foot of the mountains are generally enriched by the freſhets, which bring down the ſoil upon them, forming a fine mould, and producing corn, grain, and herbage, in the moſt luxuriant plenty. The back lands which have been cultivated are generally very fertile, and produce the various kinds of grain, fruits, and vegetables, which are common to the other parts of New England. The uncultivated lands are covered with extenſive foreſts of pine, fir, cedar, oak, walnut, &c. This ſtate affords all the materials neceſſary for ſhipbuilding.

By the return of the Cenſus Auguſt 10th 1791, the number of inhabitants in this ſtate appeared to be 141,815. There is no characteriſtical difference between the inhabitants of this and the other New England ſtates. The ancient inhabitants of New Hampſhire were emigrants from England. Their poſterity, mixed with emigrants from Maſſachuſets, fill the lower and middle towns. Emigrants from Connecticut compoſe the largeſt part of the inhabitants of the weſtern towns adjoining Connecticut river. Slaves there are none. Negroes, who were never numerous in New Hampſhire, are all free by the firſt article of the bill of rights.

In the townſhip of Hanover, in the weſtern part of this ſtate, is Dartmouth College, ſituated on a beautiful plain, about half a mile eaſt of Connecticut river, in latitude 43° 33′. It was named after the right honourable William Earl of Dartmouth, who was one of its principal benefactors. It was founded in 1769, for the education and inſtruction of youth, of the Indian tribes, in reading, writing, and all parts of learning which ſhould appear neceſſary and expedient for civilizing and chriſtianizing the children of Pagans, as well as in all liberal arts and ſciences, and alſo of Engliſh youths and any others. Its ſituation, in the frontier country, expoſed it during the late war to many inconveniences, which prevented its rapid progreſs. It flouriſhed, however, amidſt all its embarraſſments, and is now one of the moſt growing ſeminaries in the United States. It has in the four claſſes about 130 ſtudents, under the direction of a preſident, two profeſſors, and two tutors. It has 12 truſtees, who are a body corporate, inveſted with the powers neceſſary for ſuch a body. The library is elegant, containing a large collection of the moſt valuable books. Its apparatus conſiſts of a competent number of uſeful inſtruments, for making mathematical and philoſophical experiments. There are three buildings for the uſe of the ſtudents. Such is the ſalubrity of the air, that no inſtance of mortality has happened among the ſtudents ſince the firſt eſtabliſhment of the college.

At Exeter there is an academy; at Portſmouth a grammar ſchool; and all the towns are bound by law to ſupport ſchools. The inhabitants of New Hampſhire are chiefly Congregationaliſts. The other denominations are Preſbyterians, Baptiſts, and Epiſcopalians.

The firſt diſcovery made by the Engliſh of any part of New Hampſhire was in 1614, by Captain John Smith; who ranged the ſhore from Penobſcot to Cape Cod; and in this route diſcovered the river Piſcataqua. On his return to England, he publiſhed a deſcription of the country, with a map of the coaſt, which he preſented to prince Charles, who gave it the name of *New-England*. The firſt ſettlement was made in 1623.

New Hampſhire was for many years under the juriſdiction of the governor of Maſſachuſets, yet they had a ſeparate legiſlature. They ever bore a proportionable ſhare of the expences and levies in all enterpriſes, expeditions, and military exertions, whether planned by the colony or the crown. In every ſtage of the oppoſition that was made to the encroachments of the Britiſh parliament, the people, who ever had a high ſenſe of liberty, cheerfully bore their part.

HAMPSTEAD, a pleaſant village of Middleſex, four miles northweſt of London, ſtands in a healthy air, on a fine riſe, at the top of which is a heath of about a mile every way, that is adorned with ſeveral pretty ſeats, in a moſt irregular romantic ſituation, and has a moſt extenſive proſpect over London, into the counties all round it, viz. Bucks and Hertfordſhire, and even Northampton, Eſſex, Kent, Surry, Berks, &c. with an uninterrupted view of Shooter's Hill, Banſted-Downs, and Windſor Caſtle. Its church was anciently a chapel of eaſe to Hendon, till about 1748. This village uſed to be reſorted to formerly for its mineral waters, which have lately been neglected; but the wells are ſtill frequented. It is now crowded with good buildings, even on the very ſteep of the hill, where there is no walking ſix yards together without meeting a hillock; but in the reign of Henry VIII. it was chiefly inhabited by the laundreſſes who waſhed for the Londoners. Its old ruinous church, the lord of the manor's chapel, was lately pulled down, and a new one erected in its room. There is, beſides, a handſome chapel near the wells, built by the contribution of the inhabitants, who are chiefly citizens and merchants of London.

HAMPTON, a town of Glouceſterſhire in England, ſeated on the Cotſwold hills, and had formerly a nunnery. W. Long. 2. 15. N. Lat. 51. 51.

Hampton, a town of Middleſex in England, ſeated on the river Thames, 12 miles weſt of London, and two from Richmond and Kingſton. It is chiefly famous for the royal palace there, which is the fineſt in Britain. It was built by cardinal Wolſey, who had 280 ſilk beds for ſtrangers only, and furniſhed it richly with gold and ſilver plate. The buildings, gardens, and the two parks, to which William III. made conſiderable additions, are about four miles in circumference, and are watered on three ſides by the Thames. The inward court, built by king William, forms a piazza, the pillars of which are ſo low, that it looks more like a cloyſter than a palace; however, the apartments make ample amends, being extremely magnificent, and more exactly diſpoſed than in any other palace in the world, and adorned with moſt elegant furniture. Since the acceſſion of his preſent majeſty, however, this palace hath been much neglected, as the king has generally made choice of Windſor for his ſummer retreat. Thoſe inimitable paintings by Raphael Urbin called the *cartoons*, which were placed there by king William, have been removed to the queen's palace at Weſtminſter. For theſe pieces Louis XV. is ſaid to have offered 100,000 l.

HAMESOKEN, or HAMESECKEN. See HAMESECKEN.

HANAPER, or HAMPER, an office in the Engliſh chancery, under the direction of a maſter, his deputy and clerks, anſwering, in ſome meaſure, to the *fiſcus* among the Romans.

HANAPER, (*clerk of the*) ſometimes ſtyled *warden of the hanaper*, an officer who receives all money due to the king for ſeals of charters, patents, commiſſions, and writs, and attends the keeper of the ſeal daily in term time, and at all times of ſealing, and takes into his cuſtody all ſealed charters, patents, and the like, which he receives in bags, but anciently, it is ſuppoſed, in to hampers, which gave denomination to the office.

There is alſo an officer, who is comptroller of the hanaper.

HANAU, a town of Germany; and capital of a county of the ſame name, is pleaſantly ſituated on the river Kenzig near its confluence with the Mayne. The river divides it into the old and new town, both of which are fortified. The new town, which was built at firſt by French and Flemiſh refugees, who had great privileges granted them, is regular and handſome. The caſtle, in which the counts uſed to reſide, and which ſtands in the old town, is fortified, and has a fine flower-garden with commodious apartments, but makes no great appearance. The Jews are tolerated here, and dwell in a particular quarter. The magiſtracy of the new town, and the diſpoſal of all offices in it, belong to the French and Dutch congregations. Here is an univerſity, with ſeveral manufactures, particularly that of roll tobacco, and a very conſiderable traffic. E. Long. 9. 0. N. Lat. 49. 58.

HANAU-Munzenberg, a county of Germany. The greateſt part of it is ſurrounded by the electorate of Mentz, the biſhopric of Fulda, the lordſhips of Reineck, Iſenburg, and Solms; as alſo by the territories of Heſſe-Homburg. Burg-Friedburg, and Frankfort. Its length is near 40 miles, but its greateſt breadth not above 12. It is exceedingly fertile in corn, wine, and fruits: yielding alſo ſalt ſprings, with ſome copper, ſilver, and cobalt. The chief rivers are, the Mayne, the Kenzig, and the Nidda. The prevailing religion is Calviniſm, but Lutherans and Catholics are tolerated. The country is populous, and trade and manufactures flouriſh in it. In 1736, the whole male line of the counts of Hanau failing in John Reinard, William VIII. landgrave of the Heſſe Caſſel, by virtue of a treaty of mutual ſucceſſion between the families of Hanau and Heſſe Caſſel, took poſſeſſion of the county, ſatisfaction having been firſt made to the houſe of Saxony for their claims; and in the year 1754 transferred it to prince William, eldeſt ſon to the then hereditary prince Frederick, afterwards landgrave. The revenues of the laſt count, ariſing from this and other territories, are ſaid to have amounted to 500,000 florins. The principal places are Hanau, Bergen, Steinau, and Glenhauſen.

HAND, a part or member of the body of man, making the extremity of the arm. See ANATOMY, nº 53, &c.

The mechaniſm of the hand is very curious; excellently contrived to fit it for the various uſes and occaſions we have for it, and the great number of arts and manufactures it is to be employed in. It conſiſts of a compages of nerves, and little bones joined into each other, which give it a great degree of ſtrength, and at the ſame time an unuſual flexibility, to enable it to handle adjacent bodies, lay hold of them, and graſp them, in order either to draw them toward us or thruſt them off. Anaxagoras is repreſented by ancient authors, as maintaining, that man owes all his wiſdom, knowledge, and ſuperiority over other animals, to the uſe of his hands. Galen repreſents the matter otherwiſe; man, according to him, is not the wiſeſt creature, becauſe he has hands; but he had hands given him becauſe he was the wiſeſt creature; for it was not our hands that taught us arts, but our reaſon. The hands are the organs of reaſon, &c.

In ſcripture the word *hand* was variouſly applied. To pour water on any one's hand, ſignifies to ſerve him. To waſh the hands was a ceremony made uſe of to denote innocency from murder or manſlaughter. To kiſs the hand was an act of adoration. To fill the hand ſignified taking poſſeſſion of the prieſthood, and performing its functions. To lean upon any one's hand was a mark of familiarity and ſuperiority. To give the hand ſignifies to grant peace, ſwear friendſhip, promiſe ſecurity, or make alliance. The right hand was the place of honour and reſpect.—Amongſt the Greeks and Romans it was cuſtomary for inferiors to walk on the left hand of ſuperiors, that their right hand might be ready to afford protection and defence to their left ſide, which was, on account of the aukwardneſs of the left hand, more expoſed to danger.

Impoſition or *laying on of* HANDS, ſignifies the conferring of holy orders; a ceremony wherein the hands are laid on the head of another, as a ſign of a miſſion, or of a power given him to exerciſe the functions of the miniſtry belonging to the order.

The apoſtles began to appoint miſſionaries by the impoſition of hands. See IMPOSITION.

HAND, in falconry, is uſed for the foot of the hawk. To have a clean, ſtrong, ſlender, glutinous hand, well clawed, are ſome of the good qualities of a hawk or falcon.

HAND, in the manege, ſometimes ſtands for the fore-feet of a horſe. It is alſo uſed for a diviſion of the horſe into two parts, with reſpect to the riders hand. The fore-hand includes the head, neck, and fore quarters; the hind-hand is all the reſt of the horſe.

HAND is likewiſe uſed for a meaſure of four inches, or of a clenched fiſt, by which the height of a horſe is computed.

HAND is alſo figuratively uſed in painting, ſculpture, &c. for the manner or ſtyle of this or that maſter.

HANDS are borne in coat-armour, *dexter* and *ſiniſter*: that is, right and left, expanded or open; and after other manners. A bloody hand in the centre of the eſcutcheon is the badge of a baronet of Great Britain.

Hand-Breadth, a meaſure of three inches.

HANDEL (George Frederic) a moſt eminent maſter and compoſer of muſic; was born at Hall, a city of Upper Saxony in Germany. His father was a phyſician and ſurgeon, of that place, and was upwards of 60 years of age when Handel was born. During his infancy young Handel is ſaid to have amuſed himſelf with muſical inſtruments, and to have made conſiderable progreſs before he was ſeven years of age, without any inſtructions. His propenſity for muſic at laſt became ſo ſtrong, that his father, who deſigned him for the ſtudy of the civil law, thought proper to forbid him even at this early period of life, to touch a muſical inſtrument, and would ſuffer none to remain in his houſe. Notwithſtanding this prohibition, however, Handel found means to get a little clavichord privately conveyed to a room in the uppermoſt ſtory of the houſe, to which room he conſtantly ſtole when the family were aſleep: and thus made ſuch advances in his art, as enabled him to play on the harpſichord. He was firſt taken notice of by the duke of Saxe Weiſſenfels on the following occaſion. His father went to pay a viſit to another ſon by a former wife, who was valet de chambre to the duke, and reſided at his court. Young Handel being then in his ſeventh year, earneſtly deſired permiſſion to go along with him; but being refuſed, he followed the chaiſe on foot, and overtook it, the carriage being probably retarded by the roughneſs of the way. His father at firſt chid him for his diſobedience, but at laſt took him into the chaiſe along with him. While he was in the duke's court, he ſtill continued to ſhow the ſame inclination for muſic; it was impoſſible to keep him from harpſichords; and he uſed ſometimes to get into the organ-loft at church, and play after ſervice was over. On one of theſe occaſions, the duke happening to go out later than uſual, found ſomething ſo uncommon in Handel's manner of playing, that he inquired of his valet who it was; and receiving for anſwer that it was his brother, he deſired to ſee him. This nobleman was ſo much taken with the muſical genius ſhown by young Handel, that he perſuaded his father to let him follow the bent of his inclination. He made the boy a preſent; and told him, if he minded his ſtudies, no encouragement ſhould be wanting.

On his return to Hall, Handel was placed under one Zackaw, the organiſt of the cathedral church; and our young muſician was even then able to ſupply his maſter's place in his abſence. At nine years of age he begun to compoſe church-ſervices for voices and inſtruments, and continued to compoſe one ſuch ſervice every week for three years ſucceſſively. At the age of 14, he far excelled his maſter, as he himſelf owned: and he was ſent to Berlin, where he had a relation in ſome place about the court, on whoſe care and fidelity his parents could rely. The opera was then in a flouriſhing condition, being encouraged by the grandfather of the late king of Pruſſia, and under the direction of many eminent perſons from Italy, among whom were Buononcini and Attilio. Buononcini, being of a haughty diſpoſition, treated Handel with contempt; but Attilio behaved to him with great kindneſs, and he profited much by his inſtructions. His abilities ſoon recommended him to the king, who frequently made him preſents, and at laſt propoſed to ſend him into Italy under his own patronage, and to take him under his immediate protection as ſoon as his ſtudies ſhould be completed. But Handel's parents not thinking proper to ſubmit their child to the caprice of the king, declined the offer; upon which it became neceſſary for him to return to Hall.

Handel having now obtained ideas in muſic far exceeding every thing that could be found in Hall, continued there very unwillingly, and it was reſolved to ſend him into Italy; but as the expence of this journey could not then be ſpared, he went to Hamburg, where the opera was little inferior to that of Berlin. Soon after his arrival in this city, his father died; and his mother being left in narrow circumſtances, her ſon thought it neceſſary to procure ſome ſcholars, and to accept a place in the orcheſtra: by which means, inſtead of being a burden, he became a great relief to her.

At this time, the firſt harpſichord in Hamburg was played by one Keſer, a man who alſo excelled in compoſition: but he, having involved himſelf in ſome debts, was obliged to abſcond. Upon this vacancy, the perſon who had been uſed to play the ſecond harpſichord claimed the firſt by right of ſucceſſion: but was oppoſed by Handel, who founded a claim to the firſt harpſichord upon his ſuperior abilities. After much diſpute in which all who ſupported or directed the opera engaged with much vehemence, it was decided in favour of Handel, but this good ſucceſs had almoſt coſt him his life. His antagoniſt reſented the ſuppoſed affront ſo much, that, as they were coming out of the orcheſtra together, he made a puſh at Handel's breaſt with a ſword, which muſt undoubtedly have killed him, had there not fortunately been a muſic-book in the boſom of his coat.

Handel, though yet but in his 15th year, became compoſer to the houſe; and the ſucceſs of *Almeria*, his firſt opera, was ſo great, that it ran 30 nights without interruption. Within leſs than a twelvemonth after this, he ſet two others, called *Florinda* and *Norene*, which were received with the ſame applauſe. During his ſtay here, which was about four or five years, he alſo compoſed a conſiderable number of ſonatas, which are now loſt. Here his abilities procured him the acquaintance of many perſons of note, particularly the prince of Tuſcany, brother to John Gaſton de Medicis the grand duke. This prince preſſed him to go with him to Italy, where he aſſured him that no convenience ſhould be wanting; but this offer Handel thought proper to decline, being reſolved not to give up his independency for any advantage that could be offered him.

In the 19th year of his age, Handel took a journey to Italy on his own bottom; where he was received with the greateſt kindneſs by the prince of Tuſcany, and had at all times acceſs to the palace of the grand duke. His Serene Highneſs was impatient to have ſomething compoſed by ſo great a maſter; and notwithſtanding the difference between the ſtyle of the Italian muſic and the German, to which Handel had hitherto been accuſtomed, he ſet an opera called *Roderigo*

rigo, which pleaſed ſo well, that he was rewarded with 100 ſequins and a ſervice of plate. After ſtaying about a year in Florence, he went to Venice, where he is ſaid to have been firſt diſcovered at a maſquerade. He was playing on a harpſichord in his viſor, when Scarlatti, a famous performer, cried out, that the perſon who played could be none but the famous Saxon or the devil. But a ſtory ſimilar to this is reported of many eminent perſons whoſe abilites have been diſcovered in diſguiſe. Here he compoſed his opera called *Agrippina*, which was performed 27 nights ſucceſſively, with the moſt extravagant applauſe.

From Venice our muſician proceeded to Rome, where he became acquainted with cardinal Ottoboni and many other dignitaries of the church, by which means he was frequently attacked on account of his religion; but Handel declared he would live and die in the religion in which he had been educated, whether it was true or falſe. Here he compoſed an oratorio called *Reſurrectione*, and 150 cantatas, beſides ſome ſonatas, and other muſic. Ottoboni alſo contrived to have a trial of ſkill between him and Dominici Scarlatti, who was conſidered as the greateſt maſter on that inſtrument in Italy. The event is differently reported. Some ſay Scarlatti was victorious, and others give the victory to Handel; but when they came to the organ, Scarlatti himſelf aſcribed the ſuperiority to Handel.

From Rome, Handel went to Naples; after which, he paid a ſecond viſit to Florence; and at laſt, having ſpent ſix years in Italy, ſet out for his native country. In his way thither, he was introduced at the court of Hanover with ſo much advantage by the baron Kilmanſeck, that his Electoral Highneſs offered him a penſion of 1500 crowns a year as an inducement for him to continue there. This generous offer he declined on account of his having promiſed to viſit the court of the Elector Palatine, and likewiſe to go over to England in compliance with the repeated invitations of the duke of Mancheſter. The elector, however, being made acquainted with this objection, generouſly ordered him to be told, that his acceptance of the penſion ſhould neither reſtrain him from his promiſe nor reſolution: but that he ſhould be at full liberty to be abſent a year or more if he choſe it, and to go wherever he thought fit. Soon after the place of maſter of the chapel was beſtowed upon Handel; and our muſician having viſited his mother, who was now extremely aged and blind, and his old maſter Zackaw, and ſtaid ſome time at the court of the Elector Palatine, ſet out for England, where he arrived in 1710.

At that time operas were a new entertainment in England, and were conducted in a very abſurd manner: but Handel ſoon put them on a better footing; and ſet a drama called *Rinaldo*, which was performed with uncommon ſucceſs. Having ſtaid a year in England, he returned to Hanover; but in 1712 he again came over to England; and the peace of Utrecht being concluded a few months afterwards, he compoſed a grand *Te Deum* and *Jubilate* on the occaſion. He now found the nobility deſirous that he ſhould reſume the direction of the opera houſe in the Hay Market; and the queen having added her authority to their ſolicitations, and conferred on him a penſion of L.200 a year, he forgot his egagements to the Elector of Hanover and remained in Britain till the death of the queen in 1714. On the arrival of king George I. Handel, conſcious of his ill behaviour, durſt not appear at court: but he was extricated from his dilemma by the baron Kilmanſeck. Having engaged ſeveral of the Engliſh nobility in his behalf, the baron perſuaded the king to a party of pleaſure on the water. Handel was appriſed of the deſign, and ordered to prepare ſome muſic for the occaſion. This he executed with the utmoſt attention, and on the day appointed it was performed and conducted by himſelf. The king with pleaſure and ſurpriſe inquired whoſe it was, and how the entertainment came to be provided without his knowledge. The baron then produced the delinquent; and aſked leave to preſent him to his majeſty as one too ſenſible of his fault to attempt an excuſe, but ſincerely deſirous to atone for it. This interceſſion was accepted. Handel was reſtored to favour, his water muſic was honoured with the higheſt approbation, and the king added a penſion of L. 200 a year to that formerly beſtowed on him by queen Anne; which he ſoon after increaſed to L. 400, on his being appointed to teach the young princeſſes muſic.

In the year 1715, Handel compoſed his opera of *Amadige*; but from that time to the year 1720 he compoſed only *Taſeo* and *Paſtor Fido*, Buononcini and Attilio being then compoſers for the operas. About this time a project was formed by the nobility for erecting a kind of academy at the Hay Market, with a view to ſecure to themſelves a conſtant ſupply of operas to be compoſed by Handel, and performed under his direction. No leſs than L. 50,000 was ſubſcribed for this ſcheme, of which the king himſelf ſubſcribed L. 1000, and it was propoſed to continue the undertaking for 14 years. Handel went over to Dreſden, in order to engage ſingers, and returned with Seneſino and Duriſtanti. Buononcini and Attilio had ſtill a ſtrong party in their favour, but not equal to that of Handel; and therefore in 1720 he obtained leave to perform his opera of *Redamiſto*. The houſe was ſo crowded, that many fainted through exceſſive heat; and 40s. were offered by ſome for a ſeat in the gallery, after having in vain attempted to get one elſewhere. The contention, however, ſtill ran very high between Handel's party and that of the two Italian maſters; and at laſt it was determined that the rivals ſhould be jointly employed in making an opera, in which each ſhould take a diſtinct act, and he who by the general ſuffrage was allowed to have given the beſt proof of his abilities ſhould be put in poſſeſſion of the houſe. This opera was caled *Muzio Scævola*, and Handel ſet the laſt act. It is ſaid that Handel's ſuperiority was owned even in the overture before it; but when the act came to be performed, there remained no pretence of doubt or diſpute. The academy was now therefore firmly eſtabliſhed, and Handel conducted it for nine years with great ſucceſs; but about that time an irreconcileable enmity took place between Handel himſelf and Seneſino. Seneſino accuſed Handel of tyranny, and Handel accuſed Seneſino of rebellion. The merits of the quarrel are not known: the nobility, however, became mediators for ſome time; and having failed in that good deſign, they became parties in the quarrel. Handel was reſolved to diſmiſs Seneſino, and the nobility ſeemed alſo reſolved not to permit him to do ſo. The haughtineſs of

Handel's temper would not allow him to yield, and the affair ended in the total diſſolution of the academy.

Handel now found that his abilities, great as they were, could not ſupport him againſt the powerful oppoſition he met with. After the diſmiſſion of Seneſino, his audience ſenſibly dwindled away, and Handel entered into an agreement with Mr Heidegger to carry on operas in conjunction with him. New ſingers were engaged from Italy; but the offended nobility raiſed a ſubſcription againſt him, to carry on operas in the playhouſe in Lincoln's-Inn fields. Handel bore up four years againſt this oppoſition; three in partnerſhip with Heidegger, and one by himſelf: but though his muſical abilities were ſuperior to thoſe of his antagoniſts, the aſtoniſhing powers of the voice of Farinelli, whom the oppoſite party had engaged, determined the victory againſt him. At laſt Handel, having ſpent all he was worth in a fruitleſs oppoſition, thought proper to deſiſt. His diſappointment had ſuch an effect upon him, that for ſome time he was diſordered in his underſtanding, and at the ſame time his right arm was rendered uſeleſs by a ſtroke of the palſy. In this deplorable ſituation, it was thought neceſſary that he ſhould go to the baths of Aix-la-Chappelle; and from them he received ſuch extraordinary and ſudden relief, that his cure was looked upon by the nuns as miraculous.

In 1736, Handel again returned to England; and ſoon after his return his Alexander's Feaſt was performed with applauſe at Covent Garden. The ſucceſs and ſplendor of the Hay Market was by this time ſo much reduced by repeated miſmanagements, that lord Middleſex undertook the direction of it himſelf, and once more he applied to Handel for compoſition. He accordingly compoſed two operas called *Faromondo*, and *Aleſſandro Severo*, for which in 1737 he received L.1000. In 1738 he received L.1500 from a ſingle benefit, and nothing ſeemed wanting to retrieve his affairs, excepting ſuch conceſſions on his part as his opponents had a right to expect. Theſe conceſſions, however, he could not be prevailed upon to make; and that he might no longer be under obligations to act as he was directed by others, he refuſed to enter into any engagements upon ſubſcription. After having tried a few more operas at Covent Garden without ſucceſs, he introduced another ſpecies of muſic called *oratorios*, which he thought better ſuited to the native gravity of an Engliſh audience. But as the ſubjects of theſe pieces were always taken from ſacred hiſtory, it was by ſome thought to be a profanation to ſet them to muſic and perform them at a playhouſe. In conſequence of this prejudice, the oratorios met with very indifferent ſucceſs; and in 1741 Mr Handel found his affairs in ſuch a bad ſituation, that he was obliged to quit England, and go to Dublin.

He was received in Ireland in a manner ſuitable to his great merit; and his performing his oratorio called the *Meſſiah*, for the benefit of the city-priſon, brought him into univerſal favour. In nine months time he had brought his affairs into a better ſituation; and on his return to England in 1742, he found the public much more favourably diſpoſed. His oratorios were now performed with great applauſe: His Meſſiah, which before had been but coldly received, became a favourite performance; and Handel, with a generous humanity, determined to perform it annually for the benefit of the foundling hoſpital, which at that time was only ſupported by private benefactions. In 1743, he had a return of his paralytic diſorder; and in 1751 became quite blind by a *gutta ſerena* in his eyes. This laſt misfortune for ſome time ſunk him into the deepeſt deſpondency; but at laſt he was obliged to acquieſce in his ſituation, after having without any relief undergone ſome very painful operations. Finding it now impoſſible to manage his oratorios alone, he was aſſiſted by Mr Smith, who at his requeſt frequently played for him, and conducted them in his ſtead; and with this aſſiſtance they were continued till within eight days of his death. During the latter part of his life, his mind was often diſordered: yet at times it appears to have reſumed its full vigour, and he compoſed ſeveral ſongs, choruſes, &c. which from their dates may be conſidered almoſt as the laſt ſounds of his dying voice. From about October 1758 his health declined very faſt; his appetite, which had been remarkably keen, and which he had gratified to a great degree, left him; and he became ſenſible of the approach of death. On the 6th of April 1759, his laſt oratorio was performed, at which he was preſent, and died on the 14th of the ſame month. On the 20th he was buried by the right reverend Dr Pearce, biſhop of Rocheſter, in Weſtminſter abbey; where, by his own order, and at his own expence, a monument was erected to his memory.

With regard to the character of this moſt eminent muſician, he is univerſally allowed to have been a great epicure: In his temper he was very haughty, but was ſeldom or never guilty of mean actions. His pride was uniform; he was not by turns a tyrant and a ſlave. He appears to have had a moſt extravagant love for liberty and independence; inſomuch, that he would, for the ſake of liberty, do things otherwiſe the moſt prejudicial to his own intereſt. He was liberal even when poor, and remembered his former friends when he was rich. His muſical powers can perhaps be beſt expreſſed by Arbuthnot's reply to Pope, who ſeriouſly aſked his opinion of him as a muſician; "Conceive (ſaid he) the higheſt you can of his abilities, and they are much beyond any thing you can conceive."

Commemoration of HANDEL; a muſical exhibition inſtituted ſome years ago, and the grandeſt of the kind ever attempted in any nation. Of the riſe and progeſs of the deſign, together with the manner in which the firſt celebration was executed, an accurate and authentic detail is given, as might be expected, by Dr Burney in the 4th and laſt volume of his Hiſtory of Muſic, from which the following account is extracted.

"In a converſation between lord viſcount Fitzwilliam, Sir Watkin Williams Wynn, and Joah Bates, Eſq; commiſſioner of the victualling-office, the beginning of laſt year, 1783, at the houſe of the latter; after remarking that the number of eminent muſical performers of all kinds, both vocal and inſtrumental, with which London abounded, was far greater than in any other city of Europe, it was lamented that there was no public periodical occaſion for collecting and conſolidating them into one band; by which means a performance might be exhibited on ſo grand and magnificent a ſcale as no other part of the world could equal. The birth and death of Handel naturally occurred to three ſuch enthuſiaſtic admirers of that great maſter; and it was immediately recollected, that the next year (1784) would be a proper time for the introduction of ſuch a cuſtom, as it formed a complete century ſince his birth, and an exact quarter of a century ſince his deceaſe.

“ The plan was ſoon after communicated to the governors of the Muſical Fund, who approved it, and promiſed their aſſiſtance. It was next ſubmitted to the directors of the concert of Ancient Muſic; who, with an alacrity which does honour to their zeal for the memory of the great artiſt Handel, voluntarily undertook the trouble of managing and directing the celebrity. At length, the deſign coming to the knowledge of the king, it was honoured with his majeſty's ſanction and patronage. Weſtminſter-abbey, where the bones of the great muſician were depoſited, was thought the propereſt place for the performance; and application having been made to the biſhop of Rocheſter for the uſe of it, his lordſhip, finding that the ſcheme was honoured with the patronage of his majeſty, readily conſented; only requeſting, as the performance would interfere with the annual benefit for the Weſtminſter Infirmary, that part of the profits might be appropriated to that charity, as an indemnification for the loſs it would ſuſtain. To this the projectors of the plan acceded; and it was afterwards ſettled, that the profits of the firſt day's performance ſhould be equally divided between the Muſical Fund and the Weſtminſter Infirmary; and thoſe of the ſubſequent days be ſolely applied to the uſe of that fund which Handel himſelf ſo long helped to ſuſtain, and to which he not only bequeathed a thouſand pounds, but which almoſt every muſician in the capital annually contributes his money, his performance, or both, to ſupport. Application was next made to Mr James Wyatt, the achitect, to furniſh plans for the neceſſary decorations of the abbey; drawings of which having been ſhewn to his majeſty, were approved. The general idea was to produce the effect of a royal muſical chapel, with the orcheſtra terminating one end, and the accommodation for the royal family, the other. The arrangement of the performance of each day was next ſettled; and it was at his majeſty's inſtigation that the celebrity was extended to three days inſtead of two, which he thought would not be ſufficient for the diſplay of Handel's powers, or fulfilling the charitable purpoſes to which it was intended to devote the profits. It was originally intended to have celebrated this feſtival on the 20th, 22d, and 23d of April; and the 20th being the day of the funeral of Handel, part of the muſic was, in ſome meaſure, ſo ſelected as to apply to that incident. But, in conſequence of the ſudden diſſolution of parliament, it was thought proper to defer the feſtival to the 26th, 27th, and 29th of May, which ſeems to have been for its advantage: as many perſons of tender conſtitutions, who ventured to go to Weſtminſter abbey in warm weather, could not have had the courage to go thither in cold. Impreſſed with a reverence for the memory of Handel, no ſooner was the project known, but moſt of the practical muſicians in the kingdom eagerly manifeſted their zeal for the enterpriſe; and many of the moſt eminent profeſſors, waving all claims to precedence in the band, offered to perform in any ſubordinate ſtation in which their talents could be moſt uſeful.

“ In order to render the band as powerful and complete as poſſible, it was determined to employ every ſpecies of inſtrument that was capable of producing grand effects in a great orcheſtra and ſpacious building. Among theſe the ſacbut, or double trumpet, was ſought; but ſo many years had elapſed ſince it had been uſed in this kingdom, that neither the inſtrument, nor a performer upon it, could eaſily be found. It was, however, diſcovered, after much uſeleſs enquiry, not only here, but by letter, on the continent; that in his majeſty's military band there were ſix muſicians who played the three ſeveral ſpecies of ſacbut, tenor, baſe, and double baſe.

“ The double baſſoon, which was ſo conſpicuous in the orcheſtra, and powerful in its effect, is likewiſe a tube of 16 feet. It was made, with the approbation of Mr Handel, by Stainſby the flute-maker, for the coronation of his late majeſty George II. The late ingenious Mr Lampe, author of the juſtly admired muſic of The Dragon of Wantley, was the perſon intended to perform on it; but, for want of a proper reed, or for ſome other cauſe, at preſent unknown, no uſe was made of it at that time; nor indeed, tho' it has been often attempted, was it ever introduced into any band in England till now, by the ingenuity and perſeverance of Mr Aſhly, of the Guards.

“ The double-baſe kettle-drums were made from models of Mr Aſhbridge, of Drury Lane orcheſtra, in copper, it being impoſſible to procure plates of braſs large enough. The Tower drums, which, by permiſſion of his grace the duke of Richmond, were brought to the abbey on this occaſion, are thoſe which belong to the ordnance ſtores, and were taken by the duke of Marlborough at the battle of Malplaquet in 1709. Theſe are hemiſpherical, or a circle divided; but thoſe of Mr Aſhbridge are more cylindrical, being much longer, as well as more capacious, than the common kettle-drum; by which he accounts for the ſuperiority of their tone to that of all other drums. Theſe three ſpecies of kettle-drums, which may be called *tenor*, *baſe*, and *double-baſe*, were an octave below each other.

“ The excellent organ, erected at the weſt end of the abbey, for the commemoration performances only, is the workmanſhip of the ingenious Mr Samuel Green in Iſlington. It was fabricated for the cathedral of Canterbury; but before its departure for the place of its deſtination, it was permitted to be opened in the capital on this memorable occaſion. The keys of communication with the harpſichord, at which Mr Bates the conductor was ſeated, extended 19 feet from the body of the organ, and 20 feet 7 inches below the perpendicular of the ſet of keys by which it is uſually played. Similar keys were firſt contrived in this country for Handel himſelf at his oratorios; but to convey them to ſo great a diſtance from the inſtrument, without rendering the touch impracticably heavy, required uncommon ingenuity and mehcanical reſources.

“ In celebrating the diſpoſition, diſcipline, and effects of the moſt numerous and excellent band, the merit of the admirable architect, who furniſhed the elegant deſigns for the orcheſtra and galleries, muſt not be forgotten; as, when filled, they conſtituted one of the grandeſt and moſt magnificent ſpectacles which imagination can delineate. All the preparations for receiving their majeſties, and the firſt perſonages in the kingdom, at the eaſt end; upwards of 500 muſicians at the weſt; and the public in general, to the number of between 3000 and 4000 perſons, in the area and galleries; ſo wonderfully correſponded with the ſtyle of architecture of this venerable and beautiful ſtructure, that there was nothing viſible either for uſe or ornament, which did not harmonize with the principal tone of the building, and which may not metaphorically have been ſaid to have been in perfect tune with it. But, beſides the wonderful manner in which this conſtruction exhibited the band to the ſpectators, the orcheſtra was ſo judiciouſly contrived, that almoſt every performer, both vocal and inſtrumental, was in full view of the conductor and leader; which accounts, in ſome meaſure, for the uncommon eaſe with which the performers confeſs they executed their parts.

“ At the eaſt end of the aiſle, juſt before the back of the choir-organ, ſome of the pipes of which were viſible below, a throne was erected in a beautiful Gothic ſtyle, correſponding with that of the abbey, and a centre box, richly decorated and furniſhed with crimſon ſattin, fringed with gold, for the reception of their majeſties and the royal family: on the right hand of which was a box for the biſhops, and, on the left, one for the dean and chapter of Weſtminſter; immediately below theſe two boxes were two others, one on the right for the families and friends of the directors, and the other for thoſe of the prebendaries of Weſtminſter. Immediately below the king's box was placed one for the directors themſelves, who were all diſtinguiſhed by white wands tipped with gold, and gold medals, ſtruck on the occaſion, appending from white ribbons. Theſe their majeſties likewiſe condeſcended to wear at each performance. Behind, and on each ſide of the throne, there were ſeats for their majeſties' ſuite, maids of honour, grooms of the bedchamber, pages, &c.—The orcheſtra was built at the oppoſite extremity, aſcending regularly from the height of ſeven feet from the floor to upwards of forty from the baſe of the pillars, and extending from the centre to the top of the ſide aiſle.—The intermediate ſpace below was filled up with level benches, and appropriated to the early ſubſcribers. The ſide aiſles were formed into long galleries ranging with the orcheſtra, and aſcending ſo as to contain 12 rows on each ſide: the fronts of which projected before the pillars, and were ornamented with feſtoons of crimſon morine.—At the top of the orcheſtra was placed the occaſional organ, in a Gothic frame, mounting to, and mingling with, the ſaints and martyrs repreſented in the painted glaſs on the weſt window. On each ſide of the organ, cloſe to the window, were placed the kettle-drums deſcribed above. The choral bands were principally placed in view of Mr Bates, on ſteps ſeemingly aſcending into the clouds, in each of the ſide aiſles, as their termination was inviſible to the audience. The principal ſingers were ranged in the front of the orcheſtra, as at oratorios, accompanied by the choirs of St Paul, the abbey, Windſor, and the chapel royal.

“ Few circumſtances will perhaps more aſtoniſh veteran muſicians, than to be informed, that there was but one general rehearſal for each day's performance: an indiſputable proof of the high ſtate of cultivation to which practical muſic is at preſent arrived in Britain; for if good performers had not been found ready made, a dozen rehearſals would not have been ſufficient to make them ſo. Indeed, Mr Bates, in examining the liſt of performers, and inquiring into their ſeveral merits, ſuggeſted the idea of what he called a *drilling rehearſal*, at Tottenham-ſtreet Concert Room, a week before the performance; in order to hear ſuch volunteers, particularly chorus ſingers, as were but little known to himſelf, or of whoſe abilities his aſſiſtant was unable to ſpeak with certainty. At this rehearſal, though it conſiſted of 120 performers, not more than two of that number were deſired to attend no more.

“ At the general rehearſal in the abbey, mentioned above, more than 500 perſons found means to obtain admiſſion, in ſpite of every endeavour to ſhut out all but the performers; for fear of interruptions and perhaps of failure in the firſt attempts at incorporating and conſolidating ſuch a numerous band: conſiſting not only of all the regulars, both native and foreign, which the capital could furniſh, but of all the irregulars, that is, dilletanti, and provincial muſicians of character, who could be muſtered, many of whom had never heard or ſeen each other before. This intruſion, which was very much to the diſſatisfaction of the managers and conductor, ſuggeſted the idea of turning the eagerneſs of the public to ſome profitable account for the charity, by fixing the price of admiſſion to half a guinea for each perſon.

“ But, beſides the profits derived from ſubſequent rehearſals, the conſequences of the firſt were not without their uſe: for the pleaſure and aſtoniſhment of the audience, at the ſmall miſtakes, and great effects of this firſt experiment, which many had condemned by anticipation, were ſoon communicated to the lovers of muſic throughout the town, to the great increaſe of ſubſcribers and ſolicitors for tickets. For though the friends of the directors were early in ſubſcribing, perhaps from perſonal reſpect, as much as expectation of a higher muſical repaſt than uſual; yet the public in general did not manifeſt great eagerneſs in ſecuring tickets till after this rehearſal, Friday May 21. which was reported to have aſtoniſhed even the performers themſelves by its correctneſs and effects. But ſo intereſting did the undertaking become by this favourable rumour, that from the great demand of tickets it was found neceſſary to cloſe the ſubſcription.

“ Many families, as well as individuals, were attracted to the capital by this celebrity; and it was never remembered to have been ſo full, except at the coronation of his preſent majeſty. Many of the performers came unſolicited, from the remoteſt parts of the kingdom at their own expence: ſome of them, however, were afterwards reimburſed, and had a ſmall gratuity in conſideration of the time they were kept from their families by the two unexpected additional performances.

“ Foreigners, particularly the French, muſt be much aſtoniſhed at ſo numerous a band moving in ſuch exact meaſure, without the aſſiſtance of a Coryphæus to beat the time, either with a roll of paper, or a noiſy baton, or truncheon. Rouſſeau ſays, that ‘ the more time is beaten, the leſs it is kept; and it is certain, that when the meaſure is broken, the fury of the muſical general or director, increaſing with the diſobedience and confuſion of his troops, he becomes more violent, and his ſtrokes and geſticulations more ridiculous in proportion to their diſorder.

"As this commemoration is not only the firſt inſtance of a band of ſuch magnitude being aſſembled together, but of any band at all numerous, performing in a ſimilar ſituation, without the aſſiſtance of a manuductor to regulate the meaſure, the performances in Weſtminſter abbey may be ſafely pronounced no leſs remarkable for the multiplicity of voices and inſtruments employed, than for accuracy and preciſion. When all the wheels of that huge machine, the orcheſtra, were in motion, the effect reſembled clock-work in every thing but want of feeling and expreſſion. And as the power of gravity and attraction in bodies is proportioned to their maſs and denſity, ſo it ſeems as if the magnitude of this band had commanded and impelled adheſion and obedience beyond that of any other of inferior force. The pulſations in every limb, and ramifications of veins and arteries in an animal, could not be more reciprocal, iſochronus, and under the regulation of the heart, than the members of this body of muſicians under that of the conductor and leader. The totality of ſound ſeemed to proceed from one voice and one inſtrument; and its powers produced not only new and exquiſite ſenſations in judges and lovers of the art, but were felt by thoſe who never received pleaſure from muſic before. Theſe effects, which will be long remembered by the preſent public, perhaps to the diſadvantage of all other choral performances, run the riſk of being doubted by all but thoſe who heard them, and the preſent deſcription of being pronounced fabulous if it ſhould ſurvive the preſent generation."

HANG-TCHEOU-FOU, the metropolis of the province of Tche-kiang in China. See TCHE-KIANG.—It is, according to the Chineſe, the paradiſe of the earth; and may be conſidered as one of the richeſt, beſt ſituated, and largeſt cities of the empire. It is four leagues in circumference, excluſive of its ſuburbs; and the number its inhabitants amounts to more than a million. It is computed, that there are a thouſand workmen within its walls employed in manufacturing ſilk: what renders this city delightful, is a ſmall lake, called *Si-hou*, which waſhes the bottom of its walls on the weſtern ſide; its water is pure and limpid, and its banks are almoſt every where covered with flowers. Halls and open galleries, ſupported by pillars, and paved with large flag ſtones, have been erected here on piles, for the convenience of thoſe who are fond of walking; cauſeways, caſed with cut ſtone, traverſe the lake in different directions; and the openings which are left in them at intervals, for the paſſage of boats, are covered by handſome bridges. In the middle of the lake are two iſlands, to which company generally reſort after having amuſed themſelves with rowing, and in which a temple and ſeveral pleaſure-houſes have been built for their reception. The emperor has a ſmall palace in the neighbourhood. The city has a garriſon of 3000 Chineſe, under the command of the viceroy, and 3000 Tartars, commanded by a general of the ſame nation. It has under its juriſdiction ſeven cities of the ſecond and third claſs.

HANGING, a common name given to the method of inflicting death on criminals by ſuſpending them by the neck.—Phyſicians are not agreed as to the manner in which death is brought on by hanging. De Haen hanged three dogs, whom he afterwards opened. In one, nothing remarkable appeared in the lungs. In another, from whom half an ounce of blood was taken from the jugular vein, the dura and pia mater were of the natural appearance; but the lungs were much inflamed. In the third, the meninges were ſound, and there was no effuſion of blood in the ventricles of the brain, but the left lobe of the lungs was turgid with blood. Wepfer, Littræus, Alberti, Bruhierius, and Boerhaave, affirm that hanged animals die apoplectic. Their arguments for this are chiefly drawn from the lived colour of the face; from the turgeſcency of the veſſels of the brain; the inflammation of the eyes; and from the ſparks of fire which thoſe who have ſurvived hanging allege they have ſeen before their eyes. On the contrary, Bonetus, Petit, Haller, and Lanciſi, from obſerving that death is occaſioned by any ſmall body falling into the glottis, have aſcribed it to the ſtoppage of reſpiration. Others, deeming both theſe cauſes ill-founded, have aſcribed it to a luxation of the vertebræ of the neck.—De Haen adduces the authority of many eminent authors to prove the poſſibility of recovering hanged perſons; and obſerves, in general, that with bleeding in the jugular vein, and anointing the neck with warm oil, the ſame remedies are to be employed in this caſe as for the recovery of drowned people. See DROWNING.

HANGINGS, denote any kind of drapery hung up againſt the walls or wainſcotting of a room.

Paper-HANGINGS. See *PAPER-Hangings.*

Wove HANGINGS See TAPESTRY.

HANGCLIFF, a remarkable point of land on the eaſt coaſt of the largeſt of the Shetland Iſlands. It is frequently the firſt land ſeen by ſhips in northern voyages. Captain Phipps determined its ſituation to be in W. Long. 0° 56′ 30″. N. Lat. 60° 9′.

HANNIBAL, a famous Carthaginian general, of whoſe exploits an account is given under the articles CARTHAGE and ROME. After having had the miſfortune to loſe a ſea-fight with the Rhodians, through the cowardice of Apollonius one of the admirals of Antiochus the Great, he was forced to fly into Crete, to avoid falling into the hands of the Romans. On his arrival in this iſland, he took ſanctuary among the Gortynii; but as he had brought great treaſure along with him, and knew the avarice of the Cretans, he thought proper to ſecure his riches by the following ſtratagem. He filled ſeveral veſſels with melted lead, juſt covering them over with gold and ſilver. Theſe he depoſited in the temple of Diana, in the preſence of the Gortynii, with whom, he ſaid, he truſted all his treaſure: Juſtin tells us, that he left this with them as a ſecurity for his good behaviour, and lived for ſome time very quietly in theſe parts. He took care, however, to conceal his riches in hollow ſtatues of braſs; which, according to ſome, he always carried along with him; or, as others will have it, expoſed in a public place as things of little value. At laſt he retired to the court of Pruſias king of Bithynia, where he found means to unite ſeveral of the neighbouring ſtates with that prince into a confederacy againſt Eumenes king of Pergamus, a profeſſed friend to the Romans; and during the enſuing war gave Eumenes ſeveral

veral defeats, more through the force of his own genius than the valour of his troops. The Romans having received intelligence of the important ſervices performed by Hannibal, immediately diſpatched T. Quintius Flaminius as an ambaſſador to Pruſias, in order to procure his deſtruction. At his firſt audience, he complained of the protection given to that famous general, repreſenting him "as the moſt inveterate and implacable enemy the Romans ever had; as one who had ruined both his own country and Antiochus, by drawing them into a deſtructive war with Rome."—Pruſias, in order to ingratiate himſelf with the Romans, immediately ſent a party of ſoldiers to ſurround Hannibal's houſe, that he might find it impoſſible to make his eſcape. The Carthaginian, having before diſcovered that no confidence was to be repoſed in Pruſias, had contrived ſeven ſecret paſſages from his houſe, in order to evade the machination of his enemies, even if they ſhould carry their point at the Bithynian court. But guards being poſted at theſe, he could not fly, though, according to Livy, he attempted it. Perceiving, therefore, no poſſibility of eſcaping, he had recourſe to poiſon, which he had long reſerved for ſuch a melancholy occaſion. Then taking it in his hand, "Let us (ſaid he) deliver the Romans from the diſquietude with which they have long been tortured, ſince they have not patience to wait for an old man's death. Flaminius will not acquire any reputation or glory by a victory gained over a betrayed and defenceleſs perſon. This ſingle day will be a laſting teſtimony of the degeneracy of the Romans. Their anceſtors gave Pyrrhus intelligence of a deſign to poiſon him, that he might guard againſt the impending danger, even when he was at the head of a powerful army in Italy; but they have deputed a perſon of conſular dignity to excite Pruſias impiouſly to murder one who has taken refuge in his dominions, in violation of the laws of hoſpitality." Then having denounced dreadful imprecations againſt Pruſias, he drunk the poiſon, and expired at the age of 70 years. Cornelius Nepos acquaints us, that he put an end to his life by a ſubtile poiſon which he carried about with him in a ring. Plutarch relates, that, according to ſome writers, he ordered a ſervant to ſtrangle him with a cloak wrapped about his neck; and others ſay, that, in imitation of Midas and Themiſtocles, he drank bull's blood.

With reſpect to the character of this general, it appears to have been in military affairs what Demoſthenes was in oratory, or Newton in mathematics; namely, abſolutely perfect, in which no human wiſdom could diſcover a fault, and to which no man could add a perfection. Rollin hath contraſted his character with that of Scipio Africanus. He enumerates the qualities which make a complete general; and having then given a ſummary of what hiſtorians have related concerning both commanders, is inclined to give the preference to Hannibal. "There are, however (he ſays), two difficulties which hinder him from deciding; one drawn from the characters of the generals whom Hannibal vanquiſhed; the other from the errors he committed. May it not be ſaid (continues our author), that thoſe victories which made Hannibal ſo famous, were as much owing to the imprudence and temerity of the Roman generals, as to his bravery and ſkill? When a Fabius and a Scipio were ſent againſt him, the firſt ſtopped his progreſs, the other conquered him."

Theſe reaſons have been anſwered by Mr Hooke, who hath taken ſome pains to vindicate Hannibal's character, by fully and fairly comparing it with that of Scipio Africanus, and other Roman commanders. "I do not ſee (ſays he) why theſe difficulties ſhould check our author's inclination to declare in favour of the Carthaginian. That Fabius was not beaten by Hannibal, we cannot much wonder, when we remember how ſteadily the old man kept to his reſolution never to fight with him. But from Fabius's taking this method to put a ſtop to the victories of the enemy, may we not conclude that he knew no other, and thought Hannibal an overmatch for him? And why does our author forget Publius Scipio (Africanus's father), a prudent and able general, whom Hannibal vanquiſhed at the Tichin? Livy relates ſome victories of Hannibal over the celebrated Marcellus; but neither Marcellus nor any other general ever vanquiſhed Hannibal before the battle of Zama, if we may believe Polybius (lib. xv. c. 16.). Terentius Varro, indeed, is repreſented as a headſtrong raſh man; but the battle of Cannæ was not loſt by his imprudence. The order in which he drew up his army is no where condemned; and Chevalier Folard thinks it excellent. And as to the conduct of the battle, Æmilius, Paulus, a renowned captain, and a diſciple of Fabius, had a greater ſhare in it than his colleague. The imprudence with which Varro is taxed, was his venturing, contrary to his colleague's advice, with above 90,000 men to encounter in a plain field an enemy who had only 50,000, but was ſuperior in horſe. And does not the very advice of Æmilius, and the charge of temerity on Varro for not following it, imply a confeſſion of Hannibal's ſuperiority in military ſkill over Æmilius as well as Varro? It ought likewiſe to be obſerved, that Hannibal's infantry, had gained the victory over the Roman infantry, before the latter ſuffered any thing from the Carthaginian cavalry. It was otherwiſe when Scipio gained the victory at Zama. His infantry would probably have been vanquiſhed but for his cavalry. Hannibal, with only his third line of foot (his Italian army), maintained a long fight againſt Scipio's three lines of foot; and ſeems to have had the advantage over them, when Maſiniſſa and Lælius, with the horſe, came to their aſſiſtance. Polybius indeed ſays, that Hannibal's Italian forces were equal in number to all Scipio's infantry; but this is contradicted by Livy, and is not very probable. The authority of Polybius, who was an intimate friend of Scipio Æmilianus, is, I imagine, of little weight in matters where the glory of the Scipios is particularly concerned. His partiality and flattery to them are, in many inſtances, but too viſible.

Our author then proceeds to ſhow, that Hannibal was not guilty of any of the faults laid to his charge as a general; and having contraſted the moral characters of the two generals with each other, makes it evident, that as a man, as well as a general, Hannibal had greatly the advantage of his rival. See *Hooke's Roman hiſtory*, vol. iv. p. 151. *& ſeq.*

HANNO, general of the Carthaginians, was commanded to ſail round Africa. He entered the ocean through the Straits of Gibraltar, and diſcovered ſeveral countries. He would have continued his navigation, had it not been for want of proviſions. He wrote an account of his voyage, which was often quoted, but not much credited. Sigiſmund Gelenius publiſhed it in Greek at Baſil, by Frobenius, in 1533. He lived, according to Pliny, when the affairs of the Carthaginians were in the moſt flouriſhing condition; but this is a very indeterminate expreſſion.

HANOVER, an electoral ſtate of Germany, of which the king of Great Britain is elector.—Though the houſe of Hanover is the laſt that has been raiſed to the electoral dignity in the empire, it may vie with any in Germany for the antiquity and nobleneſs of its family. It is likewiſe very conſiderable for the extent of its territories, which at preſent are the duchy of Calenberg, in which are the cities of Hanover, Calenberg, Hamelen, Neuſtadt, Gottingen, &c. the duchy of Grubenhagen, the county of Diepholt, the county of Iloga, in the biſhopric of Heldeſheim; the bailiages of Coldingen, Luther, Badenburg, and Weſterſhoven, with the right of protection of the city of Hildeſheim; and the county of Danneberg, ceded by the dukes of Wolfenbuttle to the dukes of Lunenburg, as an equivalent for their pretenſions on the city of Brunſwic. The elector poſſeſſes likewiſe the county of Delmenhorſt, and the duchies of Bremen and Verden, ſold by the king of Denmark in 1715: the right of poſſeſſing alternately the biſhopric of Oznabruck belongs ſolely to the electoral branch; but if it ſhould happen to fail, the dukes of Wolfenbuttle are to enjoy the ſame right. This electorate has no navy, but a conſiderable marine on the great rivers Elbe and Weſer.

In conſideration of the great ſervices performed by Erneſt Auguſtus, duke of Brunſwic-Hanover, in the wars which the emperor Leopold had with Louis XIV. that emperor conferred the dignity of an elector of the holy Roman empire upon him and his heirs male, of which he received the inveſtiture on the 19th of December 1692. This new creation met with great oppoſition both in the electoral college and the college of princes: at laſt, by a concluſion of the three colleges on the 30th of January 1708, it was unanimouſly determined, that the electoral dignity ſhould be confirmed to the duke of Hanover, and his heirs male; but it was added, that if, while that electoral dignity ſubſiſted, the Palatine electorate ſhould happen to fall into the hands of a Proteſtant prince, the firſt Catholic elector ſhould have a ſupernumerary vote.

The princes of this houſe have their ſeat in the college of princes, immediately after thoſe of the electoral houſes; each branch having a vote. The elector, beſides his ſeat in the electoral college, was inveſted with the office of arch ſtandard bearer of the empire; but this being diſputed with him by the duke of Wirtemberg, the elector Palatine having obtained the office of arch-ſteward, yielded that of arch-treaſurer to the elector of Hanover, who was confirmed in this dignity by a decree of the diet of the 13th of January 1710.

The ſovereign power is adminiſtered by the lords of the regency appointed by the elector. Throughout all the provinces they poſſeſs a conſiderable ſhare of freedom, the people being repreſented in the aſſemblies of the ſtates. No government can be more mild; and an air of content is ſpread over all the inhabitants. The Conſeil Intimè, the High Court of Juſtice, and the Regency, are the principal courts of juſtice; beſides which, every province has its municipal adminiſtration with the inferior diviſions into bailiwicks, &c. The police is excellent, and juſtice fairly adminiſtered. The elector enjoys the right *de non appellando* in all criminal affairs, but in civil proceſſes only as far as 2000 florins.

Lutheraniſm is the eſtabliſhed religion; but all others enjoy a perfect toleration, and are publicly exerciſed. Difference in religious ſentiments here gives no interruption to that harmony which ſhould ſubſiſt among fellow citizens. There are 750 Lutheran pariſhes. 14 Reformed communities, a Romiſh college, a convent, and ſome Catholic churches.

Literature is in a very advanced ſtate throughout theſe dominions. The univerſity of Gottingen is deſervedly celebrated; and contains about 800 ſtudents of different nations, and 60 profeſſors. There are beſides ſeveral colleges, and a number of well eſtabliſhed ſchools, throughout the electorate. In general, education is much attended to.

Although there are various tracts of heath and marſhy ground, the ſoil in general produces abundance of corn, fruits, hemp, flax, tobacco, madder, and ſome wine. There are ſeveral large ſalt-works. A good deal of cattle are reared, and a great number of excellent horſes. Moſt metals and minerals are found here. The foreſts furniſh ſufficient timber, and large quantities of pitch and tar.—The natural productions of the electorate furniſh ample materials for commerce, ſo as to prevent the balance being againſt them, although their manufactures are not ſufficient for conſumption. Cattle, horſes, ſalt, wrought iron, and fuel, are principal articles of export. Bremen is one of the greateſt commercial towns in Germany.

The elector of Hanover is deſcended from the ancient family of the Guelphs, dukes and electors of Bavaria; one of whom, Henry the Lion, in 1140, married Maude, eldeſt daughter of king Henry (Plantagenet) II. of England. Their ſon William ſucceeded to Brunſwick-Lunenburg, and his ſon Otho was created duke thereof. The dominions deſcended in a direct line to Erneſt, who divided them upon his death in 1546 into two branches, that of Brunſwic Lunenburg Wolfenbuttle, and Brunſwick Lunenburg Zell. The poſſeſſor of the latter, Erneſt Auguſtus, was in 1692 raiſed to the dignity of an elector; before which he was head of the college of German princes. Erneſt married Sophia, daughter of Frederic Elector Palatine and king of Bohemia, by Elizabeth daughter of James I. king of England. Sophia being the next Proteſtant heir to the houſe of Stuart, the parliament fixed the crown of Great Britain upon her on queen Anne's demiſe; and George-Louis her eldeſt ſon became king of Great Britain in conſequence thereof: ſince which the electors of Hanover have filled the Britiſh throne.

HANOVER is alſo the name of the capital of the above electorate; and is agreeably ſituated in a ſandy plain on the river Leyne. In E. Long. 10. 5. N. Lat. 22. 5. It is a large well-built town, and pretty well fortified. It has ſuffered greatly by the French, who got poſſeſſion of it in 1757, but were ſoon after driven out. It is noted for a particular kind of beer, reckoned excellent in theſe parts. This city was the reſidence of the elector before he aſcended the throne of Great Britain. The palace makes no great ſhew outwardly; but within it is richly furniſhed. The regency ot the country is adminiſtered in the ſame manner as if the ſovereign was preſent.

HANSE, or HANS, an ancient name for a ſociety or company of merchants, particularly that of certain cities in Germany, &c. hence called *Hanſe-towns.* See HANSE-*Towns*.—The word *hanſe* is obſolete High Dutch or Teutonic; and ſignifies "alliance, confederacy, aſſociation,"&c. Some derive it from the two German words, *am-ſee*, that is "on the ſea;" by reaſon the firſt hanſe towns were all ſituated on the ſea-coaſt: whence the ſociety is ſaid to have been firſt called *am zee ſtenen,* that is, "cities in the ſea;" and afterwards by abbreviation, *hanſee*, and *hanſe*.

HANSE-*Towns*.. The hanſeatic ſociety was a league between ſeveral maritime cities of Germany, for the mutual protection of their commerce. Bremen and Amſterdam were the two firſt who formed it; whoſe trade received ſuch advantage by their fitting out two men of war in each to convoy their ſhips, that more cities continually entered into the league: even kings and princes made treaties with them, and were often glad of their aſſiſtance and protection; by which means they grew ſo powerful by both ſea and land; that they raiſed armies as well as navies enjoyed countries in ſovereignty, and made peace or war, though always in defence of their trade, as if they had been an united ſtate or commonwealth.

At this time alſo abundance of cities, though they had no great intereſt in trade, or intercourſe with the ocean came into their alliance for the preſervation of their liberties: ſo that in 1020 we find no leſs than 72 cities in the liſt of the towns of the Hanſe; particularly Bremen, Amſterdam, Antwerp, Rotterdam, Dort, Bruges, Oſtend, Dunkirk, Middleburgh, Calais, Rouen, Rochelle, Bourdeaux, St Malo, Bayonne, Bilboa, Liſbon, Seville, Cadiz, Carthagena, Barcelona, Marſeilles, Leghorn, Naples, Meſſina, London, Lubec, Roſtock, Stralſund, Stetin, Wiſmar, Konigſberg, Dantzig, Elbing, Marienburg.

The alliance was now ſo powerful, that their ſhips of war were often hired by other princes to aſſiſt them againſt their enemies. They not only awed, but often defeated all that oppoſed their commerce; and particularly in 1358, they took ſuch revenge of the Daniſh fleet in the Sound for having interrupted their commerce, that Waldemar III. then king of Denmark for the ſake of peace, gave them up all Schonen for 16 years; by which they commanded the paſſage of the Sound in their own right.—In 1428 they made war on Erick king of Denmark with 250 ſail, carrying on board 12,000 men. Theſe ſo ravaged the coaſt of Jutland, that the king was glad to make peace with them.

Many privileges were beſtowed upon the hanſe towns by Louis XI. Charles VIII. Louis XII. and Francis I. kings of France; as well as by the emperor Charles V. who had divers loans of money from them; and by king Henry III. who alſo incorporated them in a trading body, in acknowledgment for money which they advanced to him, as well as for the good ſervices they did him by their naval forces in 1206.

Theſe towns exerciſed a juriſdiction among themſelves; for which purpoſe they were divided into four colleges or provinces, diſtinguiſhed by the names of their four principalities, viz. Lubec, Cologne, Brunſwic, aud Dantzic, wherein were held their courts of judicature. They had a common ſtock or treaſury at Lubec, and power to call an aſſembly as often as neceſſary.—They kept magazines or warehouſes for the ſale of their merchandiſes in London, Bruges, Antwerp, Bergen in Norway, Revel in Livonia, Novogorod in Muſcovy, which were exported to moſt parts of Europe, in Engliſh, Dutch, and Flemiſh bottoms. One of their principal magazines was at London, where a ſociety of German merchants was formed called the *ſteelyard company*. To this company great privileges were granted by Edward I. but revoked by act of parliament in 1552 in the reign of Edward VI. on a complaint of the Engliſh merchants that this company had ſo engroſſed the cloth trade, that in the preceding year they had exported 50,000 pieces, while all the Engliſh together had ſhipped off but 1100. Queen Mary, who aſcended the throne the year following, having reſolved to marry Philip the emperor's ſon, ſuſpended the execution of the act for three years: but after that term, whether by reaſon of ſome new ſtatute, or in purſuance of that of king Edward, the privileges of that company were no longer regarded, and all efforts of the hanſe-towns to recover this loſs were in vain.

Another accident that happened to their mortification was while queen Elizabeth was at war with the Spaniards. Sir Francis Drake happening to meet 60 ſhips in the Tagus, loaden with corn, belonging to the hanſe-towns, took out all the corn as contraband goods which they were forbid to carry by their original patent. The hanſe towns having complained of this to the diet of the empire, the queen ſent an ambaſſador there to declare her reaſons. The king of Poland likewiſe intereſted himſelf in the affair, becauſe the city of Dantzic was under his protection. At laſt though the queen ſtrove hard to preſerve the commerce of the Engliſh in Germany, the emperor excluded the Engliſh company of merchant-adventurers, who had conſiderable factories at Stade, Embden, Bremen, Hamburg, and Elbing, from all trade in the empire. In ſhort, the hanſe-towns, in Germany in particular, were not only ſo flouriſhing, but in ſo formidable a ſtate, from the 14th to the 16th centuries, that they gave umbrage to all the neighbouring princes, who threatened a ſtrong confederacy againſt them; and, as the firſt ſtep towards it, commanded all the cities within their dominion or juriſdiction to withdraw from the union or hanſe, and be no farther concerned therein. This immediately ſeparated all the cities of England, France, and Italy, from them. The hanſe, on the other hand, prudently put themſelves under the protection of the empire: and as the cities juſt now mentioned had withdrawn from them; ſo they withdrew from ſeveral more, and made a decree among themſelves, that none ſhould be admitted into their ſociety but ſuch as ſtood within the limits of the German empire, or were dependent thereon: except Dantzic which continued a member, though in nowiſe dependent on the empire, only it had been ſummoned formerly to the imperial diet. By this means they maintained their confederacy for the protection of their trade, as it was begun, without being any more envied by their neighbours. Hereby likewiſe theſe were reduced to Lubec, Bremen, Hamburgh, and Dantzic; in the firſt of which they kept their regiſter, and held aſſemblies once in three years at leaſt. But this hanſe or union has for ſome time been diſſolved; and now every one of the cities carries on a trade ſeparately for itſelf, according to the ſtipulation in ſuch treaties of peace, &c. as are made for the empire betwixt the emperor and other potentates.

HANWAY (Jonas), eminent for his benevolent deſigns and uſeful writings, was born at Porſmouth, in Hampſhire on the 12th of Auguſt 1712. His father Mr Thomas Hanway, was an officer in the naval ſervice, and for ſome years ſtore-keeper to the dockyard at that place. He was deprived of his life by an accident; and left his widow with four children. Jonas, William, Thomas, and Elizabeth, all of a very tender age. Mrs Hanway, coming to London after the death of her huſband, put Jonas to ſchool, where he learned writing and accounts, and made ſome proficiency in Latin. At the age of 17 he was ſent to Liſbon, where he arrived in June 1729, and was bound apprentice to a merchant in that city. His early life, we are informed, was marked with that diſcreet attention to buſineſs, and love of neatneſs and regularity, which afterwards diſtinguiſhed his character. At Liſbon his affections were captivated by a lady, then celebrated for her beauty and mental accompliſhments; but ſhe, preferring another for her huſband, returned to England, and ſpent the latter part of her life in London with her family, on terms of friendſhip with Mr Hanway.—On the expiration of Mr Hanway's apprenticeſhip, he entered into buſineſs at Liſbon as a merchant or factor; but did not remain there long before he returned to London.

He ſoon after connected himſelf as a partner in Mr Dingley's-houſe in St Peterſburg; where he arrived on the 10th of June 1743. The trade of the Engliſh nation over the Caſpian Sea into Perſia at this period had been entruſted to the care of Mr Elton, who not content with the purſuit of commercial affairs, had injudiciouſly engaged in the ſervice of Nadir Shah to build ſhips on the Caſpian after the European manner. This had alarmed the merchants in the Ruſſian trade, and a reſolution was formed that one of their body ſhould make a journey into Perſia. On this occaſion Mr Hanway offered his ſervice, and was accepted. He ſet out on the 10th of September; and after experiencing a variety of hazards in that kingdom during a courſe of 12 months, returned to St Peterſburg January 1, 1745, without being able to eſtabliſh the intended trade by the Caſpian, partly through the jealouſy of the Ruſſian court on account of Elton's connections with the Perſians, and partly by the troubles and revolutions of the latter kingdom.

Though Mr Hanway's conduct during this expedition ſeems to have been directed by the ſtricteſt rules of integrity, yet ſome difficulties aroſe in ſettling his demands on his employers. Theſe, however, in the end were referred to the determination of impartial arbitrators, who at length decided in his favour. "I obtained (he ſays) my own; and as to any other perſonal advantage, it conſiſted in exerciſing my mind in patience under trials, and encreaſing my knowledge of the world." He now ſettled at St Peterſburg; where he remained five years, with no other variations in his life than ſuch as may be ſuppoſed to occur in the dull round of a mercantile employment. During this time he intereſted himſelf greatly in the concerns of the merchants who had engaged in the Caſpian trade; but the independence he had acquired having excited a deſire ſo ſee his native country, he, after ſeveral diſappointments which prevented him from accompliſhing his view, left St Peterſburg on the 9th of July 1750. On his arrival in his native country, he did not immediately relinquiſh his mercantile connections, though he ſeems to have left Ruſſia with that view. He employed himſelf ſome time as a merchant; but afterwards, more beneficially to the world, as a private gentleman. In 1753 he publiſhed "An Hiſtorical Account of the Britiſh Trade over the Caſpian Sea; with a Journal of Travels from London through Ruſſia into Perſia; and back again thro' Ruſſia, Germany, and Holland. To which are added, the Revolutions of Perſia during the preſent Century, with the particular Hiſtory of the great Uſurper Nadir Kouli," 4 vols 4to; a work which was received, as it deſerved to be with great attention from the pubic. In 1754 we find Mr Hanway commending a plan offered for the advantage of Weſtminſter, and ſuggeſting hints for the further improvement of it, in "A Letter to Mr John Spranger, on his excellent Propoſal for Paving, Cleanſing, and Lighting the Streets of Weſtminſter, &c." 8vo. A few years afterwards, when a ſcheme of the like kind was carried into effect, many of Mr Hanway's ideas, thrown out in this pamphlet, were adopted. In 1756, he printed "a Journal of Eight Days Journey from Portſmouth to Kingſton upon Thames, with an Eſſay on Tea;" which was afterwards reprinted in 2 vols 8vo, 1757.

At this juncture, Great Britain being on the eve of a war with France, the event of which was very important to the nation at large, and required every effort of patriotiſm, and prudence to ward off the impending danger, Mr Hanway publiſhed "Thoughts on the Duty of a good Citizen with Regard to War and Invaſion, in a Letter from a Citizen to his Friend," 8vo. About the ſame time, ſeveral gentlemen formed a plan, which was matured and made perfect by the aſſiduity of Mr Hanway, for providing the navy with ſailors, by furniſhing poor children with neceſſaries to equip them for the ſervice of their country. The ſucceſs and propriety of this ſcheme ſoon became apparent. Mr Hanway wrote and publiſhed three pamphlets on this occaſion; and the treaſurer of the Society, accompanied by Mr Hanway, having waited on the king, the Society received 1000l. from his majeſty, 400l. from the Prince of Wales, and 200l. from the Princeſs Dowager. This excellent inſtitution through life was the favourite object of Mr Hanway's care, and continued to flouriſh under his auſpices greatly to the advantage of the community. In 1758 he became an advocate for another charitable inſtitution, which derived conſiderable emolument from his patronage of it. This was the Magdalen Charity: and to aſſiſt it he publiſhed “A Letter to Robert Dingley, Eſq; being a propoſal for the Relief and employment of friendleſs Girls and repenting Proſtitutes,” 4to. He alſo printed other ſmall performances on the ſame ſubject.

In 1759, Mr Hanway wrote “Reaſons for an Augmentation of at leaſt Twelve Thouſand Mariners, to be employed in the Merchants Service and Coaſting Trade in 33 Letters to Charles Gray, Eſq; of Colcheſter, 4to.” The next year he publiſhed ſeveral performances: viz. 1. “A candid hiſtorical Account of the Hoſpital for the Reception of expoſed and deſerted young Children; repreſenting the preſent Plan of it as productive of many Evils, and not adapted to the Genius and Happineſs of this Nation.” 8vo; which being anſwered by an anonymous Letter from Halifax in “Candid Remarks, 8vo 1760,” Mr Hanway replied to it, and the Remarker rejoined. 2. “An Account of the Society for the encouragement of the Britiſh Troops in Germany and North America, &c.” 8vo. 3. “Eight Letters to —— Duke of ——, on the Cuſtom of Vails-giving in England,” 8vo. This practice of giving vails had arrived at a very extravagant pitch, eſpecially among the ſervants of the great. It was Mr Hanway who anſwered the kind reproach of a friend in a high ſtation for not coming oftener to dine with him, by ſaying “Indeed I cannot afford it.” The nobleman to whom the above letters were addreſſed was the duke of Newcaſtle. The letters are written in that humorous ſtyle which is moſt attractive of general notice, and was beſt adapted to the ſubject. It was Sir Timothy Waldo that firſt put Mr Hanway on this plan. Sir Timothy had dined with the duke of N——, and, on his leaving the houſe was contributing to the ſupport and inſolence of a train of ſervants who lined the hall; and at laſt put a crown into the hand of the cook, who returned it, ſaying, “Sir, I do not take ſilver.”—“Don't you indeed!” ſaid the worthy baronet, putting it in his pocket; then I do not give gold.” Among the ludicrous circumſtances in Mr Hanway's letters is one which happened to himſelf. He was paying the Servants of a reſpectable friend for a dinner which their maſter had invited him to, one by one as they appeared; Sir your great-coat;' a ſhilling——“Your hat:” a ſhilling—“Stick;” a ſhilling—“Umbrella:” a ſhilling—“Sir, your gloves;”—“Why, friend, “you may keep the gloves they are not worth a ſhilling.” In 1761, Mr Hanway produced “Reflections, Eſſays, and Meditations on Life and Religion: with a collection of Proverbs and 28 Letters written occaſionally on ſeveral Subjects,” in 2 vols 8vo.

The many uſeful and public ſpirited plans which Mr Hanway had promoted for the welfare of the community had now rendered his character moſt reſpectably popular, while his diſintereſtedneſs, and the ſincerity of his intentions, were conſpicuous to all. Five citizens of London of whom the late Mr Hoare the banker was one, waited on Lord Bute, at that time the miniſter; and, in their own names, and the names of their fellow citizens, requeſted that ſome notice might be taken of a man, who at the expence of his own private fortune, and unremitting application, had rendered ſo many and ſuch meritorious ſervices to his country. In conſequence of this requeſt, he was in July 1762 appointed by a patent one of the commiſſioners for victualling the navy; a poſt which he held above 21 years. The next act of public beneficence in which we find him engaged is the collection of money for the ſufferers by the fire which happened at Montreal, in the province of Quebec, in May 1765, when a fourth part of the city was conſumed. On this occaſion Mr Hanway, in conjunction with two other gentlemen, collected 8415l.—The very next year a dreadful fire broke out in Bridge Town in Barbadoes, which conſumed buildings and property to the amount of near 100,000l. A ſubſcription was opened, in which Mr Hanway was a principal actor, and 14,886l. were collected, and tranſmitted to a committee appointed at Barbadoes to diſtribute it to the unfortunate ſufferers. At ſubſequent periods he continued to intereſt himſelf in various other plans for relieving the diſtreſſes, and promoting the good, of different claſſes of the community. His attention was particularly directed towards alleviating the miſeries of young chimney-ſweepers. Beſides the diſtreſſes of theſe helpleſs beings, which are open to general obſervation, ſuch as a contortion of the limbs, and the prevention of their growth, they are liable to a diſeaſe peculiar to their occupation, now known by the name of the *chimney ſweeper's cancer*. Four children have been brought together into a workhouſe, all afflicted with this dreadful and incurable diſeaſe. After much inquiry and conſideration, he publiſhed in 1773, “The State of the Chimney-ſweepers Young Apprentices; ſhowing the wretched condition of theſe diſtreſſed Boys; the ill Conduct of ſuch Maſters as do not obſerve the Obligation of indentures; the Neceſſity of a ſtrict Inquiry in order to ſupport the civil and religious Rights of theſe Apprentices,” 12mo. This ſmall pamphlet has already been productive of ſome advantage to the objects intended to be benefited by it. The ſucceeding year 1774 he enlarged a former publication, entitled “Advice from a Farmer to his Daughter, &c.” and republiſhed it under the title of “Virtue in humble Life: containing Reflections on the reciprocal Duties of the Wealthy and Indigent, the Maſter and the Servant,” 2 vol. 8vo; a work deſerving the particular conſideration of every magiſtrate. This edition in a few months being ſold, he reprinted it in two quarto volumes, with a dedication to Mrs Montague.

In 1780, finding his health decline, he determined to reſign his office at the victualling board, which he did on the 2d of October that year; and immediately received a grant of his whole ſalary by way of a penſion, to continue for life. This favour he owed to the eſteem which his majeſty, to whom he was perſonally known entertained of him; excited by his various exertions in behalf of his country and mankind.—He was now releaſed from his moſt material buſineſs, but did not think it would conduce to his happineſs to lead an idle life. He engaged again in behalf of the chimney-ſweepers boys; and promoted, by every means in his power, the eſtabliſhment of Sunday-ſchools, which are now in a fair way to be adopted in every county in England. He likewiſe promoted a ſubſcription for the relief of the many black poor people who wandered about the metropolis in extreme diſtreſs;

and the lords of the treaſury ſeconded the deſign, by directing money, as far as 14 l. a-head, to be iſſued to the committee, to enable them to ſend the blacks to ſuch places abroad as might be fixed on. After encountering many obſtacles, about 300 negroes were ſent, properly accommodated with proviſions and neceſſaries, to Africa, under the conduct of a perſon approved for that ſtation. The object of this plan, beſides relieving the miſery of theſe poor people, was to prevent in time the unnatural connections between black perſons and white, the diſagreeable conſequences of which make their appearance but too frequently in the ſtreets.

In the ſummer of 1786 Mr Hanway's health declined ſo viſibly that he thought it neceſſary to attend only to that. He had long felt the approach of a diſorder in the bladder, which, increaſing by degrees, cauſed a ſtrangury; and at length, on the 5th of September 1786, put a period to a life ſpent almoſt entirely in the ſervice of his fellow creatures. On the 13th he was interred in the family vault at Hanwell, being attended to the grave by a numerous retinue of friends; and ſince his death the public regard to his virtues has been diſplayed by a ſubſcription of ſeveral hundred pounds towards erecting a monument to perpetuate his memory.

Mr Hanway in his perſon was of the middle ſize, of a thin ſpare habit, but well ſhaped: his limbs were faſhioned with the niceſt ſymmetry. In the latter years of his life he ſtooped very much; and when he walked, found it conduce to eaſe to let his head incline towards one ſide: but when he went firſt to Ruſſia at the age of 30, his face was full and comely, and his perſon altogether ſuch as obtained for him the appellation of the *Handſome Engliſhmen*. In his dreſs, as far as was conſiſtent with his ideas of health and eaſe, he accommodated himſelf to the prevailing faſhion. As it was frequently neceſſary for him to appear in polite circles on unexpected occaſions, he uſually wore dreſs clothes, with a large French bag. His hat ornamented with a gold button, was of a ſize and faſhion to be worn as well under the arm as on the head. When it rained, a ſmall parapluie defended his face and wig. Thus he was always prepared to enter into any company without impropriety or the appearance of negligence. His dreſs for ſet public occaſions was a ſuit of rich dark brown; the coat and waiſtcoat lined throughout with ermine, which juſt appeared at the edges; and a ſmall gold-hilted ſword. As he was extremely ſuſceptible of cold, he wore flannel under the linings of all his clothes, and uſually three pair of ſtockings. He was the firſt man who ventured to walk the ſtreets of London with an umbrella over his head. After carrying one near 30 years, he ſaw them come into general uſe. The precarious ſtate of his health when he arrived in England from Ruſſia, made it neceſſary for him to uſe the utmoſt caution; and his perſeverance in following the advice of the medical practitioners was remarkable. After Dr Lieberkyn phyſician to the king of Pruſſia had recommended milk as a proper diet to reſtore his ſtrength, he made it the chief part of his food for 30 years; and though it at firſt diſagreed with him, he perſiſted in trying it under every preparation that it was capable of till it agreed with his ſtomach. By this rigid attention and care, his health was eſtabliſhed; his lungs acquired ſtrength and elaſticity; and it is probable he would have lived ſeveral years longer, if the diſorder which was the immediate cauſe of his death had left him to the gradual decay of nature. His mind was the moſt active that it is poſſible to conceive; always on the wing, and never appearing to be weary. He roſe in the ſummer at four or five, and in the winter at ſeven. Having always buſineſs before him, he was every day employed till the time of retiring to reſt; and, when in health, was commonly aſleep within two minutes after his lying down in bed.

Writing was his favourite employment, or rather amuſement; and when the number of his literary works is conſidered, and that they were the produce only of thoſe hours which he was able to ſnatch from public buſineſs, an idea may be formed of his application. But by leaving his work to tranſact his ordinary buſineſs, and afterwards recurring to it with new ideas, all his literary labours are defective in the arrangement of the matter, and appear to have too much of the miſcellaneous in their compoſition. The original idea is ſometimes left for the purſuit of one newly ſtarted, and either taken up again when the mind of the reader has almoſt loſt it, or it is totally deſerted. Yet thoſe who are judges of literary compoſition ſay, that his language is well calculated to have the effect he deſired on the reader, and impreſs him with the idea that the author was a man of inflexible integrity, and wrote from the pure dictates of the heart. It is plain and unornamented, without the appearance of art or the affectation of ſingularity. Its greateſt defect (ſay they) is a want of conciſeneſs, its greateſt beauty, an unaffected and genuine ſimplicity. He ſpoke French and Portugueſe, and underſtood the Rus and modern Perſic imperfectly. Latin he had been taught at ſchool, but had not much occaſion to cultivate it after he entered into life.

Mr Hanway, although never married himſelf, was yet an advocate for marriage, and recommended it to all young people. He thought it the moſt effectual reſtraint on licentiouſneſs, and that an increaſe of unhappineſs was by no means the natural conſequence of an increaſe of domeſtic cares. A "local habitation," with the ſociety of a ſenſible woman, the choice of unbiaſſed affection, he eſteemed as the moſt engaging perſuaſive to the love of order and economy; without which he thought life, in whatever ſtation, muſt be disjointed and perturbed and unhappy. The lady who engaged his firſt affection was uncommonly handſome; and it is probable he was prevented from marrying only by his failing to obtain her, and the unſettled manner in which the firſt years of his life were ſpent: for he loved the ſociety of women; and in the parties which frequently breakfaſted at his houſe the ladies uſually made the greater portion of the company.

In his tranſactions with the world, he was always open, candid, and ſincere. Whatever he ſaid might be depended on with implicit confidence. He adhered to the ſtrict truth, even in the manner of his relation; and no brilliancy of thought could induce him to vary from the fact: but although ſo frank in his own proceedings, he had ſeen too much of life to be eaſily deceived by others; and he did not often place a confidence that was betrayed. He did not, however, think the world ſo degenerate as is commonly imagined:

"And if I did (he uſed to ſay), I would not let it appear; for nothing can tend ſo effectually to make a man wicked, or to keep him ſo, as a marked ſuſpicion. Confidence is the reward of truth and fidelity, and theſe ſhould never be exerted in vain." In his department of commiſſioner for victualling the navy he was uncommonly aſſiduous and attentive; and kept the contractors and perſons who had dealings with the office at a great diſtance. He would not even accept a hare or pheaſant, nor the ſmalleſt preſent, from any of them; and when any were ſent him, he always returned them, not in a moroſe manner, as if he affected the exceſs of diſintereſtedneſs, but with ſome mild anſwer; ſuch as, "Mr Hanway returns many thanks to Mr——for the preſent he intended him; but he has made it a rule not to accept any thing from any perſon engaged with the office: A rule which, whilſt he acknowledges Mr——'s good intentions, he hopes he will not expect him to break through." With all this goodneſs, Mr Hanway had a certain ſingularity of thought and manners, which was perhaps the conſequence of his living the greater part of his life in foreign countries, and never having been married. He was not by any means an inattentive obſerver of the little forms of politeneſs: but as he had ſtudied them in various realms, ſelecting thoſe which he approved, his politeneſs differed from that of other people; and his converſation had an air of originality in it that was very pleaſing.

Beſides the works already mentioned in the courſe of this article, Mr Hanway was the author of a great number of others; his different publications amounting all together to between ſixty and ſeventy. A complete liſt of them is given by his biographer Mr Pugh, from whoſe grateful and well-written performance this article has been chiefly extracted.

HAP, or HAPP, in law, ſignifies to catch or ſnatch a thing. Thus we meet with, to hap the poſſeſſion of a deed-poll. Littleton, fol. 8. alſo, to hap the rent. If partition be made between two parceners, and more land be allowed the one than the other, ſhe that hath moſt of the land charges it to the other, and happeth the rent whereon aſſize is brought.

HAPPINESS, or FELICITY, abſolutely taken, denotes the durable poſſeſſion of perfect good without any mixture of evil, or the enjoyment of pure pleaſure unalloyed with pain; or a ſtate in which all the wiſhes are ſatisfied: In which ſenſes, Happineſs is known only by name upon the earth. The word *happy*, when applied to any ſtate or condition of human life, will admit of no poſitive definition, but is merely a relative term: that is, when we call a man happy, we mean that he is happier than ſome others with whom we compare him; than the generality of others; or than he himſelf was in ſome other ſituation.

This intereſting ſubject has been treated by many eminent writers, and in a great variety of ways; but by none does it appear to have been ſet in a clearer and more definite point of view than by Archdeacon Paley in the ſixth chapter of his *Principles of Philoſophy*. "In ſtrictneſs (ſays that elegant writer), any condition may be denominated happy in which the amount or aggregate of pleaſure exceeds that of pain; and the degree of happineſs depends upon the quantity of this exceſs. And the greateſt quantity of it, ordinarily attainable in human life, is what we mean by happineſs, when we inquire or pronounce what human happineſs conſiſts in.

If any *poſitive* ſignification, diſtinct from what we mean by pleaſure, can be affixed to the term *happineſs*, it may be taken to denote a certain ſtate of the nervous ſyſtem in that part of the human frame in which we feel joy and grief, paſſions and affections. Whether this part be the heart, which the turn of moſt languages would lead us to believe; or the diaphragm, as Buffon, or the upper orifice of the ſtomach, as Van Helmont thought; or rather be a kind of fine network, lining the whole region of the præcordia, as others have imagined; it is poſſible not only that every painful ſenſation may violently ſhake and diſturb the fibres at the time, but that a ſeries of ſuch may at length ſo derange the very texture of the ſyſtem, as to produce a perpetual irritation, which will ſhow itſelf by fretfulneſs, reſtleſſneſs, and impatience. It is poſſible alſo, on the other hand, that a ſucceſſion of pleaſurable ſenſations may have ſuch an effect upon this ſubtle organization, as to cauſe the fibres to relax, and return into their place and order; and thereby to recover, or if not loſt to preſerve, that harmonious conformation which gives to the mind its ſenſe of complacency and ſatisfaction. This ſtate may be denominated *happineſs*: And is ſo far diſtinguiſhable from pleaſure, that it does not refer to any particular object of enjoyment, or conſiſt like pleaſure in the gratification of one or more of the ſenſes; but is rather the ſecondary effect which ſuch objects and gratifications produce upon the nervous ſyſtem, or the ſtate in which they leave it. The comparative ſenſe, however, in which we have explained the term *happineſs*, is more popular; and in proſecuting the ſubject, we may conſider, 1. What human happineſs does not conſiſt in; and, 2. What it does conſiſt in.

1. *Firſt* then happineſs does not conſiſt in the pleaſures of ſenſe, in whatever profuſion or variety they be enjoyed. By the pleaſures of ſenſe are meant, as well the animal gratifications of eating, drinking, and that by which the ſpecies is continued, as the more refined pleaſures of muſic, painting, architecture, gardening, ſplendid ſhows, theatric exhibitions, and the pleaſures, laſtly, of active ſports, as of hunting, ſhooting, fiſhing &c. For, 1. Theſe pleaſure continue but for a little while at a time. This is true of them, all, eſpecially of the groſſer ſort. Laying aſide the preparation and the expectation, and computing ſtrictly the actual ſenſation, we ſhall be ſurpriſed to find how inconſiderable a portion of our time they occupy, how few hours in the four and twenty they are able to fill up. 2. By repetition, they loſe their reliſh. It is a property of the machine, for which we know no remedy, that the organs by which we perceive pleaſure are blunted and benumbed, by being frequently exerciſed in the ſame way. There is hardly any one who has not found the difference between a gratification when new and when familiar, and any pleaſure which does not become indifferent as it grows habitual. 3. The eagerneſs for high and intenſe delights takes away the reliſh from all others; and as ſuch delights fall rarely in our way, the greater part of our time becomes from this cauſe empty and uneaſy. There is hardly any deluſion by which men are greater ſufferers in their happineſs, than by their expecting too much from

what is called *pleaſure*, that is, from thoſe intenſe delights which vulgarly engroſs the name of pleaſure. The very expectation ſpoils them. When they do come, we are often engaged in taking pains to perſuade ourſelves how much we are pleaſed, rather than enjoying any pleaſure which ſprings naturally out of the object. And whenever we depend upon being vaſtly delighted, we always go home ſecretly grieved at miſſing our aim. Likewiſe as hath been obſerved juſt now when this humour of being prodigiouſly delighted has once taken hold of the imagination, it hinders us from providing for or acquieſcing in thoſe gently ſoothing engagements, the due variety and ſucceſſion of which are the only things that ſupply a continued ſtream of happineſs.

The truth ſeems to be that there is a limit at which theſe pleaſures ſoon arrive, and from which they ever afterwards decline. They are by neceſſity of ſhort duration, as the organs cannot hold on their emotions beyond a certain length of time; and if you endeavour to compenſate for their imperfection in their nature by the frequency with which you repeat them, you loſe more than you gain by the fatigue of the faculties and the diminution of ſenſibility. We have in this account ſaid nothing of the loſs of opportunities or the decay of faculties, which whenever they happen, leave the voluptuary deſtitute and deſperate; teaſed by deſires that can never be gratified, and the memory of pleaſures which muſt return no more. It will alſo be allowed by thoſe who have experienced it, and perhaps by thoſe alone, that pleaſure which is purchaſed by the incumbrance of our fortune is purchaſed too dear: the pleaſure never compenſating for the perpetual irritation of embarraſſed circumſtances.

Theſe pleaſures, after all, have their value: and as the young are always too eager in their purſuit of them, the old are ſometimes too remiſs; that is, too ſtudious of their eaſe to be at the pains for them which they really deſerve.

Secondly, Neither does happineſs conſiſt in an exemption from pain, labour, care, buſineſs, ſuſpenſe, moleſtation, and "thoſe evils which are without;" ſuch a ſtate being uſually attended not with eaſe, but with depreſſion of ſpirits, a taſteleſſneſs in all our ideas, imaginary anxieties and the whole train of hypochondriacal affections. For which reaſon it ſeldom anſwers the expectations of thoſe who retire from their ſhops and counting-houſes to enjoy the remainder of their days in leiſure and tranquillity; much leſs of ſuch as in a fit of chagrin ſhut themſelves up in cloyſters and hermitages, or quit the world and their ſtations in it for ſolitude and repoſe.

Where there exiſts a known external cauſe of uneaſineſs, the cauſe may be removed, and the uneaſineſs will ceaſe. But thoſe imaginary diſtreſſes which men feel for want of real ones (and which are equally tormenting, and ſo far equally real); as they depend upon no ſingle or aſſignable ſubject of uneaſineſs, ſo they admit oft-times of no application or relief. Hence a moderate pain, upon which the attention may faſten and ſpend itſelf, is to many a refreſhment; as a fit of the gout will ſometimes cure the ſpleen. And the ſame of any moderate agitation of the mind, as a literary controverſy, a law-ſuit, a conteſted election, and above all gaming; the paſſion for which, in men of fortune and liberal minds, is only to be accounted for on this principle.

Thirdly, Neither does happineſs conſiſt in greatneſs, rank, or elevated ſtation.

Were it true that all ſuperiority afforded pleaſure, it would follow, that by how much we were the greater, that is, the more perſons we were ſuperior to, in the ſame proportion, ſo far as depended upon this cauſe, we ſhould be the happier; but ſo it is, that no ſuperiority yields any ſatisfaction, ſave that which we poſſeſs or obtain over thoſe with whom we immediately compare ourſelves. The ſhepherd perceives no pleaſure in his ſuperiority over his dog; the farmer in his ſuperiority over the ſhepherd; the lord in his ſuperiority over the farmer; nor the king, laſtly, in his ſuperiority over the lord. Superiority, where there is no competition, is ſeldom contemplated; what moſt men indeed are quite unconſcious of. But if the ſame ſhepherd can run, fight, or whiſtle, better than the peaſants of his village; if the farmer can ſhow better cattle, if he keeps a better horſe, or be ſuppoſed to have a longer purſe, than any farmer in the hundred; if the lord have more intereſt in an election, greater favour at court, a better houſe, or larger eſtate, than any nobleman in the country; if the king poſſeſſes a more extenſive territory, a more powerful fleet or army, a more ſpendid eſtabliſhment, more loyal ſubjects, or more weight and authority in adjuſting the affairs of nations, than any prince in Europe; in all theſe caſes, the parties feel an actual ſatisfaction in their ſuperiority. No ſuperiority appears to be of any account but a ſuperiority over a rival. This, it is manifeſt, may exiſt wherever rivalſhips do; and rivalſhips fall out amongſt men of all ranks and degrees. The object of emulation, the dignity or magnitude of this object, makes no difference; as it is not what either poſſeſſes that conſtitutes the pleaſure, but what one poſſeſſes more than the other. Philoſophy ſmiles at the contempt with which the rich and great ſpeak of the petty ſtrifes and competitions of the poor; not reflecting that theſe ſtrifes and competitions are juſt as reaſonable as their own, and the pleaſure which ſucceſs affords the ſame.

It appears evident then, that happineſs does not conſiſt in greatneſs; ſince what are ſuppoſed to be the peculiar advantages of greatneſs, the pleaſures of ambition and ſuperiority, are in reality common to all conditions. But whether the purſuits of ambition be ever wiſe, whether they contribute more to the happineſs or miſery of the purſuers, is a different queſtion; and a queſtion concerning which we may be allowed to entertain great doubt. The pleaſure of ſucceſs is exquiſite; ſo alſo is the anxiety of the purſuit, and the pain of diſappointment; and what is the worſt part of the account, the pleaſure is ſhort lived. We ſoon ceaſe to look back upon thoſe whom we have left behind; new conteſts are engaged in, new proſpects unfold themſelves; a ſucceſſion of ſtruggles is kept up, whilſt there is a rival left within the compaſs of our views and profeſſion; and when there is none, the pleaſure with the purſuit is at an end.

II. We have ſeen what happineſs does *not* conſiſt in. We are next to conſider in what it *does* conſiſt. In the conduct of life, the great matter is, to know beforehand what will pleaſe us, and what pleaſures will hold out. So far as we know this, our choice will be juſtified by the event. And this knowledge is more rare and difficult than at firſt ſight it may ſeem to be: For ſometimes pleaſures, which are wonderfully alluring and flattering in the proſpect, turn out in the poſſeſſion extremely inſipid; or do not hold out as we expected: at other times pleaſures ſtart up, which never entered into our calculation, and which we might have miſſed of by not foreſeeing; from whence we have reaſon to believe, that we actually do miſs of many pleaſures from the ſame cauſe.

By reaſon of the original diverſity of taſte, capacity, and conſtitution, obſervable in the human ſpecies, and the ſtill greater variety which habit and faſhion have introduced in theſe particulars; it is impoſſible to propoſe any plan of happineſs which will ſucceed to all, or any method of life which is univerſally eligible or practicable. All that can be ſaid is, that there remains a preſumption in favour of thoſe conditions of life in which men generally appear moſt cheerful and contented. For though the apparent happineſs of mankind be not always a true meaſure of their real happineſs, it is the beſt meaſure we have.

Upon this principle, then, happineſs appears to conſiſt,

1. In the exerciſe of the ſocial affections.——Thoſe perſons commonly poſſeſs good ſpirits who have about them many objects of affection and endearment; as wife, children, kindred, friends: and to the want of theſe may be imputed the peeviſhneſs of monks, and of ſuch as lead a monaſtic life. Of the ſame nature with the indulgence of our domeſtic affections, and equally refreſhing to the ſpirits, is the pleaſure which reſults from acts of bounty and beneficence, exerciſed either in giving money, or in imparting to thoſe who want it the aſſiſtance of our ſkill and profeſſion.

2. Another main article of human happineſs is, the exerciſe of our faculties, either of body or mind, in the purſuit of ſome engaging end.

It ſeems to be true, that no plenitude of preſent gratifications can make the poſſeſſor happy for a continuance, unleſs he have ſomething in reſerve, ſomething to hope for and look forward to. This may be inferred from comparing the alacrity and ſpirits of men who are engaged in any purſuit which intereſts them, with the dejection and *ennui* of almoſt all who are either born to ſo much that they want nothing more, or who have *uſed up* their ſatisfactions too ſoon, and drained the ſources of them. It is this intolerable vacuity of mind which carries the rich and great to the horſe-courſe and the gaming table; and often engages them in conteſts and purſuits of which the ſucceſs bears no proportion to the ſolicitude and expence with which it is ſought.

The queſtion now occurs, How we are to provide ourſelves with a ſucceſſion of pleaſurable engagements? This requires two things: Judgment in the choice of ends adapted to our opportunities; and a command of imagination, ſo as to be able, when the judgment has made choice of an end, to transfer a pleaſure to the *means*; after which the end may be forgotten as ſoon as we will. Hence thoſe pleaſures are moſt valuable, not which are moſt exquiſite in the fruition, but moſt productive of engagement and activity in the purſuit.

A man who is in earneſt in his endeavours after the happineſs of a future ſtate, has in this reſpect an advantage over all the world. For he has conſtantly before his eyes an object of ſupreme importance, productive of perpetual engagement and activity, and of which the purſuit (which can be ſaid of no purſuit beſides) laſts him to his life's end. Yet even he muſt have many ends beſide the far end; but then they will conduct to that, be ſubordinate, and in ſome way or other capable of being referred to that, and derive their ſatisfaction, or an addition of ſatisfaction, from that.

Engagement is every thing. The more ſignificant, however, our engagements are, the better; ſuch as the planning of laws, inſtitutions, manufactures, charities, improvements, public works, and the endeavouring by our intereſt, addreſs, ſolicitations, and activity, to carry them into effect: Or, upon a ſmaller ſcale, the procuring of a maintenance and fortune for our families, by a courſe of induſtry and application to our callings, which forms and gives motion to the common occupations of life; training up a child; proſecuting a ſcheme for his future eſtabliſhment; making ourſelves maſters of a language or a ſcience; improving or managing an eſtate; labouring after a piece of preferment: And, laſtly, any engagement which is innocent is better than none; as the writing of a book, the building of a houſe, the laying out of a garden, the digging of a fiſh-pond; even the raiſing of a cucumber or a tulip. Whilſt the mind is taken up with the objects or buſineſs before it, we are commonly happy, whatever the object or buſineſs be: when the mind is abſent, and the thoughts are wandering to ſomething elſe than what is paſſing in the place in which we are, we are often miſerable.

3. The art in which the ſecret of human happineſs in a great meaſure conſiſts, is to ſet the habits in ſuch a manner, that every change may be a change for the better. The habits themſelves are much the ſame; for whatever is made habitual becomes ſmooth, and eaſy, and indifferent. The return to an old habit is likewiſe eaſy, whatever the habit be. Therefore the advantage is with thoſe habits which allow of indulgence in the deviation from them. The luxurious receive no greater pleaſure from their dainties than the peaſant does from his bread and cheeſe; but the peaſant whenever he goes abroad finds a feaſt, whereas the epicure muſt be well entertained to eſcape diſguſt. Thoſe who ſpend every day at cards, and thoſe who go every day to plough, paſs their time much alike; intent upon what they are about, wanting nothing, regretting nothing, they are both in a ſtate of eaſe: But then, whatever ſuſpends the occupation of the card-player diſtreſſes him; whereas to the labourer, every interruption is a refreſhment: and this appears in the different effect that the Sabbath produces upon the two, which proves a day of recreation to the one, but a lamentable burden to the other. The man who has learned to live alone, feels his ſpirits enlivened whenever he enters into company, and takes his leave without regret: another, who has long been accuſtomed to a crowd or continual ſucceſſion of company, experiences in company no elevation of ſpirits, nor any greater ſatisfaction than what the man of a retired life finds in his chimney-corner. So far their conditions are equal: but let a change of place, fortune, or ſituation, ſeparate the companion from his circle, his viſitors, his

club, common-room, or coffee-houſe, and the difference of advantage in the choice and conſtitution of the two habits will ſhow itſelf. Solitude comes to the one clothed with melancholy; to the other it brings liberty and quiet. You will ſee the one fretful and reſtleſs, at a loſs how to diſpoſe of his time, till the hour comes round that he can forget himſelf in bed: the other eaſy and ſatisfied, taking up his book or his pipe as ſoon as he finds himſelf alone; ready to admit any little amuſement that caſts up, or to turn his hands and attention to the firſt buſineſs that preſents itſelf; or content without either to ſit ſtill, and let his trains of thought glide indolently through his brain, without much uſe, perhaps, or pleaſure, but without hankering after any thing better and without irritation. A reader who has inured himſelf to books of ſcience and argumentation, if a novel, a well written pamphlet, an article of news, a narrative of a curious voyage, or the journal of a traveller, fall in his way, ſits down to the repaſt with reliſh, enjoys his entertainment while it laſts, and can return when it is over to his graver reading without diſtaſte. Another, with whom nothing will go down but works of humour and pleaſantry, or whoſe curioſity muſt be intereſted by perpetual novelty, will conſume a bookſeller's window in half a forenoon: during which time he is rather in ſearch of diverſion than diverted: and as books to his taſte are few and ſhort and rapidly read over, the ſtock is ſoon exhauſted, when he is left without reſource from this principal ſupply of innocent amuſement.

So far as circumſtances of fortune conduce to happineſs, it is not the income which any man poſſeſſes, but the increaſe of income that affords the pleaſure. Two perſons, of whom one begins with 100l. and advances his income to 1000l. a year; and the other ſets off with 1000 l. and dwindles down to 100 l. may, in the courſe of their time, have the receipt and ſpending of the ſame ſum of money; yet their ſatisfaction, ſo far as fortune is concerned in it, will be very different: the ſeries and ſum total of their incomes being the ſame, it makes a wide difference which end they begin at.

4. Happineſs conſiſts in health: underſtanding by health, not only freedom from bodily diſtempers, but alſo that tranquillity, firmneſs, and alacrity of mind, which we call *good ſpirits*. For the ſake of health, according to this notion of it, no ſacrifices can be too great. Whether it require us to relinquiſh lucrative ſituations, to abſtain from favourite indulgences, to control intemperate paſſions, or undergo tedious regimens; whatever difficulties it lays us under, a man, who purſues his happineſs rationally and reſolutely, will be content to ſubmit to. When we are in perfect health and ſpirits, we feel in ourſelves a happineſs independent of any particular outward gratification whatever, and of which we can give no account. This is an enjoyment which the Deity has annexed to life; and probably conſtitutes, in a great meaſure the happineſs of infants and brutes, eſpecially of the lower and ſedentary orders of animals, as of oyſters, periwinkles, and the like.

The above account of human happineſs will juſtify theſe two concluſions, which, although found in moſt books of morality, have ſeldom been ſupported by any ſufficient reaſons: 1. "That happineſs is pretty equally diſtributed amongſt the different orders of civil ſociety; and, 2. That vice has no advantage over virtue, even with reſpect to this world's happineſs."

HAQUE, in old writers, a litle hand-gun, prohibited to be uſed for deſtruction of game, &c. by ſtatute 33 Hen. VIII. cap. 6. and 2 & 3 Ed. VI. cap. 14. There is alſo the half-haque, or demi-haque, within the ſaid acts.

HARAM. See SERAGLIO.

HARAN, otherwiſe CHARRÆ in Meſopotamia, a city celebrated for having been the place where Abraham firſt retreated after he left Ur (Gen. xi. 31, 32): and where Terah, Abraham's father, died and was buried. Thither it was likewiſe that Jacob retired to Laban when he fled from the indignation of his brother Eſau (id. xxvii 45. xxviii.10, &c.) Laſtly at Haran or Charræ in Meſopotamia, Craſſus the Roman general was defeated and killed by the Parthians. Haran was ſituated between the Euphrates and the river Chebar, at a good diſtance from the place where theſe two rivers join.

HARANGUE, a modern French name for a ſpeech or oration made by an orator in public,—Menage derives the word from the Italian *arenga*, which ſignifies the ſame; formed, according to Ferrari, from *aringo*, "a juſt, or place of juſting." Others derive it from the Latin *ara*, "altar;" by reaſon the firſt harangues were made before altars; whence the verſe of Juvenal.

Aut Lugdunenſis rhetor dicturus ad aram.

HARANGUES were uſually made by the generals, previous to an engagement both amongſt the Greeks and Romans. An harangue on ſuch occaſions was called *allocutio*. See ALLOCUTIO.

The word is alſo frequently uſed in an ill ſenſe, viz. for a too pompous, prolix, or unſeaſonable ſpeech or declamation.

HARBINGER, an officer of a king's houſhold, having four yeomen under him, who ride a day's journey before the court when it travels, to provide lodgings, &c.

HARBOROUGH, a town of Leiceſterſhire, 84 miles from London. It is a great thoroughfare in the road to Derby, near the ſource of the river Welland; and was famous in Camden's time, for its beaſt fair, where the beſt horſes and colts are ſtill ſold. Its fairs are April 29. and Oct. 19. The market is on Tueſday, for the uſe of which the Earl of Harborough has lately built a neat market-houſe at his own expence. Here is a good free-ſchool, and a fair chapel of eaſe to Great-bowden in its pariſh.

HARBOUR, a general name given to any ſea-port or haven, as alſo to any place convenient for mooring ſhipping, although at a great diſtance from the ſea. The qualities requiſite in a good harbour are, that the bottom be entirely free from rocks or ſhallows; that the opening be of ſufficient extent to admit the entrance or departure of large ſhips without difficulty; that it ſhould have good anchoring ground, and be eaſy of acceſs; that it ſhould be well defended from the violence of the wind and ſea; that it ſhould have room and convenience to receive the ſhipping of different nations, and thoſe which are laden with different merchandiſes; that it be furniſhed with a good lighthouſe, and have a variety of proper rings, poſts, moorings,

ings, &c. in order to remove or ſecure the veſſels contained therein; and, finally, that it have plenty of wood, and other materials for firing, beſides hemp, iron, mariners, &c.

HARBURG, a ſmall town of Germany in the circle of Lower Saxony, and dutchy of Lunenburg ſeated on the river Elbe over againſt Hamburgh. It was ſurrounded with walls in 1355: and 30 years after, a ſtrong caſtle, which ſtill remains, was built by the biſhop. E. Long. 9. 41. N. 53. 51.

HARDENING, the giving a greater degree of hardneſs, to bodies than they had before.

There are ſeveral ways of hardening iron and ſteel, as by hammering them; quenching them in cold water, &c. See STEEL.

*Caſe-*HARDENING. See *Case-Hardening.*

HARDERWICH, a town of the United Provinces, in Dutch Guelderland. It is a well-built town, and the chief of the ſea-ports of this province. It has ſeveral good buildings, particularly the great church, which is much admired. In 1648 the public ſchool here was turned into an univerſity. The French did it a great deal of damage in 1672; ſince which time it has been on the decline. E. Long. 5. 37. N. Lat. 52. 14.

HARDNESS, in bodies, a property directly oppoſite to fluidity; by which they reſiſt the impreſſion of any other ſubſtance, ſometimes in an extreme degree. As fluidity has been found to conſiſt in the motion of the particles of a body upon one another in conſequence of a certain action of the univerſal fluid or elementary fire among them; we muſt conclude that hardneſs conſiſts in the abſence of this action, or a deficiency of what is called *latent heat.* This is confirmed by obſerving, that there is in intermediate ſtate betwixt hardneſs and fluidity, in which bodies will yield to a certain force, though they ſtill make a conſiderable reſiſtance. This is principally obſerved in the metals, and is the foundation of their ductility. It appears, indeed, that this laſt property, as well as fluidity, is entirely dependent on a certain quantity of latent heat abſorbed, or otherwiſe acting within the ſubſtance itſelf; for all the metals are rendered hard by hammering, and ſoft by being put again into the fire and kept there for ſome time. The former operation renders them hot as well as hard; probably, as Dr Black obſerves, becauſe the particles of metal are thus forced nearer one another, and thoſe of fire ſqueezed out from among them. By keeping them for ſome time in the fire, that element inſinuates itſelf again among the particles and arranges them in the ſame manner as before, ſo that the ductility returns By a ſecond hammering this property is again deſtroyed, returning on a repetition of the heating, or *annealing* as it is called; and ſo on, as often as we pleaſe.

Hardneſs appears to diminiſh the coheſion of bodies in ſome degree, though their fragility does not by any means keep pace with their hardneſs. Thus, glaſs is very hard and very brittle: but flint, though ſtill harder than glaſs, is much leſs brittle. Among the metals, however, theſe two properties ſeem to be more connected, though even here the connection is by no means complete. Steel, the hardeſt of all the metals is indeed the moſt brittle; but lead, the ſofeſt, is not the moſt ductile. Neither is hardneſs connected with the ſpecific gravity of bodies: for a diamond, the hardeſt ſubſtance in nature, is little more than half the weight of the lighteſt metal. As little is it connected with the coldneſs, electrical properties, or any other quality with which we are acquainted: ſo that though the principle above laid down may be accepted as a general foundation for our inquiries, a great number of particulars remain yet to be diſcovered before we can offer any ſatisfactory explanation.

All bodies become harder by cold: but this is not the only means of their doing ſo, for ſome become hard by heat as well as cold. Thus water becomes hard by cold when it is frozen, but it becomes much harder when its ſteam is paſſed over red-hot iron, and it enters the ſubſtance of the metal, by an union with which it becomes almoſt as hard as glaſs.

Mr Quiſt and others have conſtructed tables of the hardneſs of different ſubſtance. The method purſued in conſtructing theſe tables was by obſerving the order in which they were able to cut or make any impreſſion upon one another. The following table, extracted from M. Magellan's edition of Cronſtedt's Mineralogy, was taken from Dr Quiſt, Bergman, and Mr Kirwan. The firſt column ſhows the hardneſs, and the ſecond the ſpecific gravity.

Diamond from Ormus	20	—	3,7
Pink diamond	19	—	3,4
Bluiſh diamond	19	—	3,3
Yellowiſh diamond	19	—	3,3
Cubic diamond	18	—	3,2
Ruby	17	—	4,2
Pale ruby from Brazil	16	—	3,5
Ruby ſpinell	13	—	3,4
Deep blue ſaphire	16	—	3,8
Ditto paler	17	—	3,8
Topaz	15	—	4,2
Whitiſh ditto	14	—	3,5
Bohemian ditto	11	—	2,8
Emerald	12	—	2,8
Garnet	12	—	4.4
Agate	12	—	2,6
Onyx	12	—	2,6
Sardonyx	12	—	2,6
Occid. amethyſt	11	—	2,7
Cryſtal	11	—	2,6
Cornelian	11	—	2,7
Green jaſper	11	—	2,7
Reddiſh yellow ditto	9	—	2,6
Schoerl	10	—	3,6
Tourmaline	10	—	3,0
Quartz	10	—	2,7
Opal	10	—	2,6
Chryſolite	10	—	3,7
Zeolyte	8	—	2,1
Fluor	7	—	3,5
Calcareous ſpar	6	—	2,7
Gypſum	5	—	2,3
Chalk	3	—	2,7

HARDOUIN (John), a learned French Jeſuit in the beginning of the 18th century, known by the remarkable paradoxes he advanced in his writings; this in particular, That all the works of the ancient profane writers, except Cicero's works, Virgil's Georgics, Horace's ſatires and epiſtles, and Pliny's natural hiſtory, are mere forgeries. He died at Paris in 1726, aged 83. His principal works are, 1. An edition of Pliny's natural hiſtory, with notes, which is much eſteemed. 2. An edition of the councils, which made much noiſe. 3. Chronology reſtored by medals, 4to. 4. A commentary on the New Teſtament, folio; in which he pretends that our Saviour and his apoſtles preached in Latin, &c.

HARDWICKE. See York.

HARE, in zoology. See Lepus.

The hare is a beaſt of venery, or of the foreſt, but peculiarly ſo termed in the ſecond year of her age. There are reckoned four ſorts of them, from the place of their abode: ſome live in the mountains, ſome in the fields, ſome in marſhes, and ſome wander about every where. The mountain-hares are the ſwifteſt, the field-hares are not ſo nimble, and thoſe of the marſhes are the ſloweſt: but the wandering hares are the moſt dangerous to follow; for they are cunning in the ways and mazes of the fields, and, knowing the neareſt ways, run up the hills and rocks, to the confuſion of the dogs, and the diſcouragement of the hunters. See the article Hunting.

Hares and rabbits are very miſchievous to new planted orchards, by peeling off the barks of the tender and young trees for their food. They do alſo the ſame ſort of miſchief to nurſeries; for the prevention of which, ſome bind ropes about the trees up to ſuch a height as they are able to reach; ſome daub them with tar; but though this keeps off the hares, it is itſelf miſchievous to the trees; but this hurtful property of it is in ſome degree taken off by mixing any kind of fat or greaſe with it, and incorporating them well over the fire. This mixture is to be rubbed over the lower part of the trees in November, and will preſerve them till that time the next year, without any danger from theſe animals. It is only in the hard weather in the winter ſeaſon, when the other food is ſcarce, that theſe creatures feed on the barks of trees.

People who have the care of warrens, pretend to an odd way of making hares fat when they get them there. This is the ſtopping up their ears with wax, and rendering them deaf. The hare is ſo timorous a creature that ſhe is continually liſtening after every noiſe, and will run a long way on the leaſt ſuſpicion of danger; ſo that ſhe always eats in terror, and runs herſelf out of fleſh continually. Theſe are both prevented by her feeding in a ſafe place, and that without apprehenſion; and they ſay ſhe will always readily be fattened in this way.

Though the hare lives on vegetables and water only, yet the habitual exerciſe of this animal exalts its ſalts, and renders it ſomewhat alcaleſcent; and this tendency is much increaſed, if it is killed immediately after being heated by ſtrong exerciſe.

Java Hare. See Mus.

Hare's Ear, in botany. See Bupleurum.

HARE (Dr Francis), an Engliſh biſhop, of whoſe birth we have no particulars, was bred at Eton ſchool, and from that foundation became a member of Eton college, Cambridge; where he had the tuition of the marquis of Blandford, only ſon of the illuſtrious duke of Marlborough, who appointed him chaplain-general to the army. He afterwards obtained the deanery of Worceſter, and from thence was promoted to the biſhopric of Chicheſter, which he held with the deanery of St Paul's to his death, which happened in 1740. He was diſmiſſed from being chaplain to George I. in 1718, by the ſtrength of party prejudices, in company with Dr Moſs and Dr Sherlock, perſons of diſtinguiſhed rank for parts and learning—About the latter end of queen Anne's reign he publiſhed a remarkable pamphlet intituled, The difficulties and diſcouragements which attend the ſtudy of the ſcriptures, in the way of private judgment: in order to ſhew, that ſince ſuch a ſtudy of the ſcriptures is an indiſpenſable duty, it concerns all Chriſtian ſocieties to remove, as much as poſſible, thoſe diſcouragements. In this work, his manner appeared to be ſo ludicrous, that the convocation fell upon him, as if he were really againſt the ſtudy of the holy ſcriptures: and Whiſton ſays, that finding this piece likely to hinder that preferment he was ſeeking for, he aimed to conceal his being the author. He publiſhed many pieces againſt biſhop Hoadly, in the Bangorian Controverſy, as it is called; and alſo other learned works, which were collected after his death and publiſhed in four vols. 8vo. 2. An edition of Terence, with notes, in 4to. 3. The book of Pſalms in the Hebrew, put into the original poetical metre, 4to. In this laſt work, he pretends to have diſcovered the Hebrew metre, which was ſuppoſed to be irretrievably loſt. But his hypotheſis, though defended by ſome, yet has been confuted by ſeveral learned men, particularly by Dr Lowth in his *Metricæ Hareanæ brevis confutatio,* annexed to his lectures *De Sacra Poeſi Hebræorum.*

HARESBURY, a town of Wiltſhire, on the Willy, near Warminſter, 94 miles from London, is in old records called *Heightſbury* or *Heytſbury*; and now it is writ Hatchbury. It was once the ſeat of the empreſs Maud. Here are fairs May 14th, and September 15th; and it has ſent members to parliament ever ſince Henry VI. it being an ancient borough by preſcription. There is an almſhouſe here for 12 poor men and a woman. Here is a collegiate church with four prebendaries, and a free ſchool, and the place is governed by a bailiff and burgeſſes.

HARFLEUR, an ancient town of France, in Normandy; but is now a poor place, on account of its fortifications being demoliſhed, and its harbour choaked up. It was taken by the Engliſh, by aſſault, in the year 1415. It is ſeated on the river Lizarda, near the Seine, five miles from Havre de Grace, forty north-weſt of Rouen, and one hundred and ſix north-weſt of Paris. E. Long. 0. 17. N. Lat. 49. 30.

HARIOT, or Heriot, in law, a due belonging to a lord at the death of his tenant, conſiſting of the beſt beaſt, either horſe, or cow, or ox, which he had at the time of his death; and in ſome manors the beſt goods, piece of plate, &c. are called hariots.

Hariot (Thomas), See Harriot.

HARLECH, a town of Merionethſhire, in north Wales. It is ſeated on a rock, on the ſea-ſhore; and is but a poor place, though the ſhire-town, and ſends a member to parliament. It had formerly a ſtrong handſome caſtle, which was a garriſon for Charles I. in the civil wars, for which reaſon it was afterwards demoliſhed by the parliament. W. Long. 4. 0. N. Lat. 54. 47.

HARLEIAN Collection.—A moſt valuable

collection of uſeful and curious manuſcripts, begun near the end of the laſt century, by Robert Harley of Brampton Bryan, Eſq; in Herefordſhire, afterwards earl of Oxford and lord high-treaſurer; and which was conducted upon the plan of the great Sir Robert Cotton. He publiſhed his firſt conſiderable collection in Auguſt 1705, and in leſs than ten years he got together near 2500 rare and curious MSS. Soon after this, the celebrated Dr George Hicks, Mr Anſtis garter king at arms, biſhop Nicolſon, and many other eminent antiquaries, not only offered him their aſſiſtance in procuring MSS. but preſented him with ſeveral that were very valuable. Being thus encouraged to perſeverance by his ſucceſs, he kept many perſons employed in purchaſing MSS. for him abroad, giving them written inſtructions for their conduct. By theſe means the MS. library was in the year 1721, increaſed to near 6000 books, 14,000 original charters, and 500 rolls.

On the 21ſt of May 1724 lord Oxford died: but his ſon Edward, who ſucceeded to his honours and eſtate, ſtill farther enlarged the collection; ſo that when he died, June 16th 1741, it conſiſted of 8000 volumes, ſeveral of them containing diſtinct and independent treatiſes, beſides many looſe papers which have been ſince ſorted and bound up in volumes; and above 40,000 original rolls, charters, letters patent, grants, and other deeds and inſtruments of great antiquity.

The principal deſign of making this collection was the eſtabliſhment of a MS. Engliſh hiſtorical library, and the reſcuing from deſtruction ſuch national records as had eluded the diligence of preceding collectors: but lord Oxford's plan was more extenſive; for his collection abounds alſo with curious MSS. in every ſcience.—This collection is now in the Britiſh Muſeum and an enumeration of its contents may be ſeen in the Annual Regiſter, vi. 140, &c.

HARLEM, a town of the United Provinces, in Holland, ſituated on the river Sparren, in E. Long. 5. 17. N. Lat. 53. 22. It is a large and populous city, and ſtands near a lake of the ſame name, with which it has a communication, as well as with Amſterdam and Leyden, by means of ſeveral canals. Schemes have been often formed for draining of this lake, but were never put in execution. To the ſouth of the town lies a wood, cut into delightful walks and viſtas. The town is famous for the ſiege which it held out againſt the Spaniards for ten months in 1573; the townſmen before they capitulated being reduced to eat the vileſt animals, and even leather and graſs. The inhabitants correſponded with the prince of Orange for a conſiderable time by means of carrier-pigeons. Harlem, as is well known, claims the invention of printing; and in fact, the firſt eſſays of the art are indiſputably to be attributed to Laurentius, a magiſtrate of that city. [See LAURENTIUS, and *(Hiſtory of)* PRINTING.] Before the Reformation, Harlem was a biſhop's ſee; and the Papiſts ſtill greatly outnumber the Proteſtants. An academy of ſciences was founded here in 1752. Vaſt quantities of linen and thread are bleached here; the waters of the lake having a peculiar quality, which renders them very fit for that purpoſe—A ſort of phrenſy with regard to flowers, particularly tulips, once prevailed here, in conſequence of which the moſt beautiful ſorts were bought and ſold at an extravagant price.

HARLEQUIN, in the Italian comedy, a buffoon, dreſſed in party-coloured cloaths; anſwering much the ſame purpoſe as a merry-andrew or jack-pudding in our drolls, on mountebanks ſtages, &c. We have alſo introduced the harlequin upon our theatres; and this is one of the ſtanding characters in the modern groteſque or pantomime entertainments.—The term took its riſe from a famous Italian comedian who came to Paris under Henry III. and who frequenting the houſe of M. de Harlay, his companions uſed to call him Harlequino, q. d. little Harlay; a name which has deſcended to all thoſe of the ſame rank and profeſſion.

HARLEY (Robert), earl of Oxford and Mortimer, was the eldeſt ſon of Sir Edward Harley, and born in 1661. At the Revolution, Sir Edward and his ſon raiſed a troop of horſe at their own expence; and after the acceſſion of king William and queen Mary, he obtained a ſeat in parliament. His promotions were rapid: in 1702, he was choſen ſpeaker of the houſe of commons; in 1704, he was ſworn of queen Anne's privy council, and the ſame year made ſecretary of ſtate; in 1706, he acted as one of the commiſſioners for the treaty of Union; and in 1710, was appointed a commiſſioner of the treaſury, and chancellor and under-treaſurer of the exchequer. A daring attempt was made on his life, March 8. 1711, by the marquis of Guiſcard a French Papiſt; who, when under an examianation before a committee of the privy council, ſtabbed him with a penknife. Of this wound, however, he ſoon recovered; and was the ſame year created earl of Oxford, and lord high-treaſurer, which office he reſigned juſt before the queen's death. He was impeached of high treaſon in 1715, and committed to the Tower; but was cleared by trial, and died in 1724. His character has been variouſly repreſented, but cannot be here diſcuſſed. He was not only an encourager of literature, but the greateſt collector in his time of curious books and MSS. his collection of which makes a capital part of the Britiſh Muſeum. See HARLEIAN *Collection.*

HARLING. See HERLING.

HARLINGEN, a ſea-port town of the United Netherlands, in Weſt Frieſland. It ſtands on the coaſt of the Zuyder ſea, at the mouth of a large canal, in E. Long. 5. 25. N. Lat. 53. 12. It was only a hamlet till about the year 1304, when it was deſtroyed by the ſea; and being afterwards rebuilt, became a conſiderable town. In 1579, it was conſiderably enlarged by the care of William prince of Orange. It is now very well fortified, and is naturally ſtrong, as the adjacent country can very eaſily be laid under water. The city is ſquare; and the ſtreets are handſome, ſtraight, and clean, with canals in the middle of them. It has five gates; four towards land, and one towards the ſea; but though the harbour is good, yet veſſels of great burden cannot get into it until they are lightened for want of water. The admiralty college of Frieſland has its ſeat here. The manufactures are ſalt, bricks, and tiles; a conſiderable trade is alſo carried on in all ſorts of linen cloth, and the adjacent country yields abundance of corn and good paſtures.

HARLOCK, or HARLEICH, a town of Merionethſhire, in North Wales, 223 miles from London, on the ſea coaſt, near the north weſt point of the county.

It is naturally ſtrong, a garriſon being kept here for the ſecurity of the coaſt. Its caſtle lies now in ruins. The town, though a corporation and governed by a mayor, makes but a very mean appearance. It has a market on Saturdays, and four fairs in the year.

HARLOT, a woman given to incontinency, or that makes a habit or a trade of proſtituting her body.—The word is ſuppoſed to be uſed for the diminutive *whorelet*, a “little whore.”—Others derive it from *Arletta*, miſtreſs to Robert duke of Normandy, and mother to William the Conqueror; Camden derives it from one *Arlotha*, concubine to William the Conqueror: Others from the Italian *Arlotta*, “a proud whore.”

Harlots were tolerated amongſt Jews, Greeks, and Romans. Fornication indeed was prohibited among the Jews, under ſevere penalties; but theſe are explained as extending only to women of their own nation. The public ſtews were therefore ſtocked with foreign proſtitutes, who ſeem to have been taken under the protection of government. Hence appears the reaſon why the word *ſtrange woman* is often found to ſignify a harlot. Proſtitutes at firſt wore veils or maſks; but by and by their modeſty was entirely put to flight, and they went abroad bare-faced. At Athens the proſtitutes were generally ſtrangers: and ſuch as debauched an Athenian female were liable to a penalty. To frequent the public ſtews was not held diſgraceful! The wiſeſt of the Heathen ſages allowed it! Solon permitted common whores to go publicly to the young men who had engaged them, and encouraged the youth of Athens to gratify their luſt with theſe, rather than ſeduce and debauch the wives and daughters of citizens. Cato the Cenſor was of the ſame ſentiments; and Cicero challenges all perſons to name a time when men were either reproved for this practice, or not countenanced in it. Amongſt the Jews, the harlots uſed to ply in the highways and ſtreets of cities; at Athens they frequented the ceramicus, circus, and the old forum.—In ſome places they were diſtinguiſhed by their dreſs from other women. Corinth was a remarkable nurſery of harlots, and gave birth to the noted Lais. Their accompliſhments were oftentimes great, in all the polite and elegant parts of female education, viz. philoſophy, dancing, ſinging, rhetoric, &c. Aſpaſia, the miſtreſs of Pericles, was admired by Socrates for her learning. The more accompliſhed proſtitutes frequently amaſſed large fortunes; a remarkable inſtance of which we have in Phryne, who offered to rebuild the walls of Thebes, when deſtroyed by Alexander, on condition that they would perpetuate her memory and profeſſion by an inſcription. Proſtitutes at Rome were obliged to fix a bill over their doors, indicating their character and profeſſion. It was alſo cuſtomary for them to change their names, after they had ſignified to the prætor, their intention of leading ſuch a diſſolute life: this they did, becauſe their trade was unbecoming their birth and condition; but they re-aſſumed their family names when they quitted their infamous mode of living. Women whoſe grandfather, father, or huſband, had been a Roman knight, were forbidden by the laws to make a public profeſſion of lewdneſs.

HARMATTAN, the name of a remarkable periodical wind which blows from the interior parts of Africa towards the Atlantic ocean. Of this wind we have the following account in the Philoſophical Tranſactions, vol. 71. furniſhed by Mr Norris, a gentleman who had frequent opportunities of obſerving its ſingular properties and effects.

“ On that part of the coaſts of Africa which lies between the Cape Verd and Cape Lopez, an eaſterly wind prevails during the months of December, January, and February, which by the Fantees, a nation on the Gold coaſt, is called the *Harmattan*. Cape Verd is in 15 N. latitude, and Cape Lopez in 1 S. latitude; and the coaſt between theſe two Capes runs in an oblique direction, nearly from W. S. W. to E. S. E. forming a range of upwards of 2100 miles. At the iſles de Los, which are a little to the northward of Sierra Leone, and to the ſouthward of Cape Verd, it blows from the E. S. E on the Gold coaſt from the N. E. and at Cape Lopez. and the river Gabon, from the N. N. E. This wind is by the French and Portugueſe, who frequent the Gold coaſt, called ſimply the N. E. wind, the quarter from which it blows. The Engliſh, who ſometimes borrow words and phraſes from the Fantee language, which is leſs guttural and more harmonious, than that of their neighbours, adopt the Fantee word Harmattan.

The harmattan comes on indiſcriminately at any hour of the day, at any time of the tide, or at any period of the moon, and continues ſometimes only a day or two, ſometimes five or ſix days, and it has been known to laſt fifteen or ſixteen days. There are generally three or four returns of it every ſeaſon. It blows with a moderate force, not quite ſo ſtrong as the ſea-breeze (which every day ſets in during the fair ſeaſon from the W. W. S. W. and S. W); but ſomewhat ſtronger than the land wind at night from the N. and N. N. W.

1. A fog or haze is one of the peculiarities which always accompanies the harmattan. The gloom occaſioned by this fog is ſo great as ſometimes to make even near objects obſcure. The Engliſh fort at Whydah ſtands about the midway between the French and Portugueſe forts, and not quite a quarter of a mile from either. yet very often from thence neither of the other forts can be diſcovered. The ſun, concealed the greateſt part of the day, appears only a few hours about noon, and then of a mild red, exciting no painful ſenſation on the eye.

2. Extreme dryneſs makes another extraordinary property of this wind. No dew falls during the continuance of the harmattan; nor is there the leaſt appearance of moiſture in the atmoſphere. Vegetables of every kind are very much injured, all tender plants and moſt of the productions of the garden, are deſtroyed; the graſs withers, and becomes dry like hay; the vigorous ever-greens likewiſe feel its pernicious influence; the branches of the lemon, orange, and lime-trees droop, the leaves become flaccid, wither, and if the harmattan continues to blow for 10 or 12 days, are ſo parched, as to be eaſily rubbed to duſt between the fingers: the fruit of theſe trees, deprived of its nouriſhment, and ſtinted in its growth, only appears to ripen, for it becomes yellow and dry, without acquiring half the uſual ſize. The natives take this opportunity of the extreme dryneſs of the graſs and young trees to ſet fire to them, eſpecially near their

their roads, not only to keep theſe roads open to travellers, but to deſtroy the ſhelter which long graſs, and thickets of young trees, would afford to ſkulking parties of their enemies. A fire thus lighted flies with ſuch rapidity, as to endanger thoſe who travel; in that ſituation, a common method of eſcape is, on diſcovering a fire to windward, to ſet the graſs on fire to leeward, and then follow your own fire. There are other extraordinary effects produced by the extreme dryneſs of the harmattan.

The parching effects of this wind are likewiſe evident on the external parts of the body. The eyes, noſtrils, lips, and palate, are rendered dry and uneaſy, and drink is often required, not ſo much to quench thirſt, as to remove a painful aridity in the fauces. The lips and noſe become ſore and even chapped; and though the air be cool, yet there is a troubleſome ſenſation of prickling heat on the ſkin. If the harmattan continues four or five days, the ſcarf ſkin peels off, firſt from the hands and face, and afterwards from the other parts of the body if it continues a day or two longer. Mr Norris obſerved, that when ſweat was excited by exerciſe on thoſe parts which were covered by his cloaths from the weather, it was peculiarly acrid, and taſted, on applying his tongue to his arm, ſomething like ſpirits of hartſhorn diluted with water.

3. Salubrity forms a third peculiarity of the harmattan. Though this wind is ſo very prejudicial to vegetable life, and occaſions ſuch diſagreeable parching effects on the human ſpecies, yet it is highly conducive to health. Thoſe labouring under fluxes and intermitting fevers generally recover in an harmattan. Thoſe weakened by fevers, and ſinking under evacuations for the cure of them; particularly bleeding, which is often injudiciouſly repeated, have their lives ſaved, and vigour reſtored, in ſpite of the doctor. It ſtops the progreſs of epidemics; the ſmall-pox, remittent fevers, &c. not only diſappear, but thoſe labouring under theſe diſeaſes when an harmattan comes on, are almoſt certain of a ſpeedy recovery. Infection appears not then to be eaſily communicated even by art. In the year 1770, there were on board the Unity, at Whydah, above 300 ſlaves; the ſmall-pox broke out among them, and it was determined to inoculate; thoſe who were inoculated before the harmattan came on got very well through the diſeaſe. About 70 were inoculated a day or two after the harmattan ſet in, but no one of them had either ſickneſs or eruption. It was imagined that the infection was effectually diſperſed and the ſhip clear of the diſorder; but in a very few weeks it began to appear among theſe ſeventy. About 50 of them were inoculated the ſecond time; the others had the diſeaſe in a natural way: an harmattan came on, and they all recovered, excepting one girl, who had an ugly ulcer on the inoculated part, and died ſome time afterwards of a locked jaw."

This account differs remarkably from that given by Dr Lind, who calls the harmattan a malignant and fatal wind; (See his *Diſeaſes of Hot Climates.*) As to the nature of the ſoil over which it blows, it appears that excepting a few rivers and ſome lakes, the country about and beyond Whydah is covered for 400 miles back with verdure, open plains of graſs, clumps of trees, and ſome woods of no conſiderable extent. The ſurface is ſandy, and below that a rich reddiſh earth: it riſes with a gentle aſcent for 150 miles from the ſea, before there is the appearance of a hill, without affording a ſtone of the ſize of a walnut. Beyond theſe hills there is no account of any great ranges of mountains.

HARMODIUS, a friend of Ariſtogiton, who delivered his country from the tyranny of the Piſiſtratidæ. (See ARISTOGITON.) The Athenians, to reward that patriotiſm of theſe illuſtrious citizens, made a law that no one ſhould ever after bear the name of Ariſtogiton and Harmodius.

HARMONIA, in fabulous hiſtory, the wife of Cadmus, both of whom were turned into ſerpents. See CADMUS.

Though many of the ancient authors made Harmonia a princeſs of divine origin, there is a paſſage in Athenæus from Euhemerus, the Vanini of his time, which tells us, that ſhe was by profeſſion a player on the flute, and in the ſervice of the prince of Zidon previous to her departure with Cadmus. This circumſtance, however, might encourage the belief, that as Cadmus brought letters into Greece, his wife brought *harmony* thither; as the word ἁρμονια *harmonia*, has been ſaid to have no other derivation than from her name: which makes it very difficult to aſcertain the ſenſe in which the Greeks made uſe of it in their muſic†; for it has no roots by which it can be decompounded, in order to deduce from them its etymology. The common account of the word, however, that is given by lexicographers, and generally adopted by the learned, does not confirm this opinion. It it generally derived from αρμονιζω, and this from the old verb Αρω *apto*, to *fit* or *join*.

HARMONIC. As an adjective, it ſignifies in general any thing belonging to harmony; though in our language the adjective is more properly written *harmonical*. In this caſe it may be applied to the *harmonical* diviſions of a monochord; or, in a word, to conſonances in general. As a ſubſtantive neuter, it imports all the concomitant or acceſſary ſounds which, upon the principles reſulting from the experiments made on ſonorous bodies, attend any given ſound whatever, and render it appretiable. Thus all the aliquot parts of a muſical ſtring produce *harmonical* ſounds, or *harmonics*.

HARMONICA. This word, when originally appropriated by Dr Franklin to that peculiar form or mode of muſical glaſſes, which he himſelf, after a number of happy experiments, had conſtituted, was written *Armonica*. In this place, however, we have ventured to reſtore it to its native plenitude of ſound, as we have no antipathy againſt the moderate uſe of aſpirations. It is derived from the Greek word ἁρμονια. The radical word is αρειν, *to ſuit* or *fit one thing to another* By the word ἁρμονια the Greeks expreſſed *aptitudes* of various kinds: and from the uſe which they made of that expreſſion, we have reaſon to conclude, that it was intended to import the higheſt degree of refinement and delicacy in thoſe relations which it was meant to ſignify. Relations or aptitudes of ſound, in particular, were underſtood by it; and in this view, Dr Franklin could not have ſelected a name more expreſſive of its nature and genius, for the inſtrument which we are now to deſcribe; as, perhaps, no muſical tone can poſſibly be finer, nor conſequently ſuſceptible

† See *Harmony*.

ceptible of juſter concords, than thoſe which it produces

In an old Engliſh book, whoſe title we cannot at preſent recollect, and in which a number of various amuſements were deſcribed, we remember to have ſeen the elements or firſt approaches to muſic by glaſſes. That author enjoins his pupil to chooſe half a dozen of ſuch as are uſed in drinking; to fill each of them with water in proportion to the gravity or acuteneſs of the ſound which he intended it ſhould produce; and having thus adjuſted them one to another, he might entertain the company with a church-tune. Theſe, perhaps, were the rude and barbarous hints which Mr Puckeridge afterwards improved. But, for a farther account of him, of the ſtate in which he left the inſtrument, and of the ſtate to which it has afterwards been carried, we muſt refer our readers to the following extracts from Dr Franklin's letters, and from others who have written upon the ſame ſubject.

The Doctor, in his letter to Father Beccaria, has given a minute and elegant account of the Harmonica. Nor does it appear that his ſucceſſors have either more ſenſibly improved, or more accurately delineated that angelic inſtrument. The detail of his own improvements, therefore, ſhall be given in his own words.

" Perhaps (ſays he) it may be agreeable to you, as you live in a muſical country, to have an account of the new inſtrument lately added here to the great number that charming ſcience was poſſeſſed of before. As it is an inſtrument that ſeems peculiarly adapted to Italian muſic, eſpecially that of the ſoft and plaintive kind, I will endeavour to give you ſuch a deſcription of it, and of the manner of conſtructing it, that you or any of your friends may be enabled to imitate it, if you incline ſo to do, without being at the expence and trouble of the many experiments I have made in endeavouring to bring it to its preſent perfection.

" You have doubtleſs heard the ſweet tone that is drawn from a drinking-glaſs, by preſſing a wet finger round its brim. One Mr Puckeridge, a gentleman from Ireland, was the firſt who thought of playing tunes formed of theſe tones. He collected a number of glaſſes of different ſizes; fixed them near each other on a table: and tuned them by putting into them water, more or leſs as each note required. The tones were brought out by preſſing his fingers round their brims. He was unfortunately burnt here, with his inſtrument, in a fire which conſumed the houſe he lived in. Mr E. Delaval, a moſt ingenious member of our Royal Society, made one in imitation of it with a better choice and form of glaſſes, which was the firſt I ſaw or heard. Being charmed with the ſweetneſs of its tones, and the muſic he produced from it, I wiſhed to ſee the glaſſes diſpoſed in a more convenient form, and brought together in a narrower compaſs, ſo as to admit of a greater number of tones, and all within reach of hand to a perſon ſitting before the inſtrument; which I accompliſhed, after various intermediate trials, and leſs commodious forms, both of glaſſes aud conſtruction, in the following manner.

" The glaſſes are blown as near as poſſible in the form of hemiſpheres, having each an open neck or ſocket in the middle. The thickneſs of the glaſs near the brim is about the tenth of an inch, or hardly quite ſo much, but thicker as it comes nearer the neck; which in the largeſt glaſſes is about an inch deep, and an inch and a half wide within; theſe dimenſions leſſening as the glaſſes themſelves diminiſh in ſize, except that the neck of the ſmalleſt ought not to be ſhorter than half an inch.—The largeſt glaſs is nine inches diameter, and the ſmalleſt three inches. Between theſe there are 23 different ſizes, differing from each other a quarter of an inch in diameter. To make a ſingle inſtrument there ſhould be at leaſt ſix glaſſes blown of each ſize; and out of this number one may probably pick 37 glaſſes (which are ſufficient for three octaves with all the ſemitones) that will be each either the note one wants, or a little ſharper than that note, and all fitting ſo well into each other as to taper pretty regularly from the largeſt to the ſmalleſt. It is true there are not 37 ſizes; but it often happens that two of the ſame ſize differ a note or half a note in tone, by reaſon of a difference in thickneſs, and theſe may be placed one in the other without ſenſibly hurting the regularity of the taper form.

" The glaſſes being choſen, and every one marked with a diamond the note you intend it for, they are to be tuned by diminiſhing the thickneſs of thoſe that are too ſharp. This is done by grinding them round from the neck towards the brim, the breadth of one or two inches as may be required; often trying the glaſs by a well-tuned harpſichord, comparing the note drawn from the glaſs by your finger with the note you want, as ſounded by that ſtring of the harpſichord. When you come near the matter, be careful to wipe the glaſs clean and dry before each trial, becauſe the tone is ſomething flatter when the glaſs is wet than it will be when dry;—and grinding a very little between each trial, you will thereby tune to great exactneſs. The more care is neceſſary in this, becauſe if you go below your required tone there is no ſharpening it again but by grinding ſomewhat off the brim which will afterwards require poliſhing, and thus increaſe the trouble.

" The glaſſes being thus tuned, you are to be provided with a caſe for them, and a ſpindle on which they are to be fixed. My caſe is about three feet long, eleven inches every way wide within at the biggeſt end, and five inches at the ſmalleſt end; for it tapers all the way to adapt it better to the conical figure of the ſet of glaſſes. This caſe opens in the middle of its heighth, and the upper part turns up by hinges fixed behind. The ſpindle is of hard iron, lies horizontally from end to end of the box within, exactly in the middle, and is made to turn on braſs gudgeons at each end. It is round, an inch diameter at the thickeſt end, and tapering to a quarter of an inch at the ſmalleſt.—A ſquare ſhank comes from its thickeſt end through the box, on which ſhank a wheel is fixed by a ſcrew. This wheel ſerves as a fly to make the motion equable, when the ſpindle, with the glaſſes, is turned by the foot like a ſpinning-wheel. My wheel is of mahogany, 18 inches diameter, and pretty thick, ſo as to conceal near its circumference about 25lb. of lead.—An ivory pin is fixed in the face of this wheel, about four inches from the axis. Over the neck of this pin is put the loop of the ſtring that comes up from the moveable ſtep to give it motion. The caſe ſtands on a neat frame with four legs.

To fix the glaſſes on the ſpindle, a cork is firſt to be fitted in each neck pretty tight, and projecting a little without the neck, that the neck of one may not touch the inſide of another when put together, for that would make a jarring. Theſe corks are to be perforated with holes of different diameters, ſo as to ſuit that part of the ſpindle on which they are to be fixed. When a glaſs is put on, by holding it ſtiffly between both hands, while another turns the ſpindle, it may be gradually brought to its place. But care muſt be taken that the hole be not too ſmall, leſt in forcing it up, the neck ſhould ſplit; nor too large, leſt the glaſs, not being firmly fixed, ſhould turn or move on the ſpindle, ſo as to touch or jar againſt its neighbouring glaſs. The glaſſes thus are placed one in another; the largeſt on the biggeſt end of the ſpindle, which is to the left hand: the neck of this glaſs is towards the wheel; and the next goes into it in the ſame poſition, only about an inch of its brim, appearing beyond the brim of the firſt, thus proceeding, every glaſs when fixed ſhows about an inch of its brim (or three quarters of an inch, or half an inch as they grow ſmaller) beyond the brim of the glaſs that contains it; and it is from theſe expoſed parts of each glaſs the tone is drawn, by laying a finger on one of them as the ſpindle and glaſſes turn round.

“ My largeſt glaſs is G a little below the reach of a common voice, and my higheſt G, including three complete octaves. To diſtinguiſh the glaſſes more readily to the eye, I have painted the apparent parts of the glaſſes within-ſide, every ſemitone white, and the other notes of the octave with the ſeven priſmatic colours *viz.* C, red; D, orange; E, yellow; F, green; G, blue; A, indigo; B, purple; and C, red again;—ſo that the glaſſes of the ſame colour (the white excepted) are always octaves to each other.

“ This inſtrument is played upon by ſitting before the middle of the ſet of glaſſes, as before the keys of a harpſichord, turning them with the foot, and wetting them now and then with a ſpunge and clean water. The fingers ſhould be firſt a little ſoaked in water, and quite free from all uneaſineſs; a little fine chalk upon them is ſometimes uſeful, to make them catch the glaſs and bring out the tone more readily. Both hands are uſed, by which means different parts are played together.—Obſerve, that the tones are beſt drawn out when the glaſſes turn *from* the ends of the fingers, not when they turn *to* them.

“ The advantages of this inſtrument are, that its tones are incomparably ſweet beyond thoſe of any other; that they may be ſwelled and ſoftened at pleaſure by ſtronger or weaker preſſures of the finger, and continued to any length; and that the inſtrument, being once well tuned, never again wants tuning.”

Such was the ſtate in which this learned and ingenious author found, and ſuch the perfection to which he carried, that celeſtial inſtrument of which we now treat. We call it *celeſtial*; becauſe, in compariſon with any other inſtrument which we know, the ſounds that it produces are indeed heavenly. Some of them, however, are ſtill conſtructed in the ſame imperfect manner as the inſtrument of Mr Puckeridge. They are contained in an oblong cheſt; their poſitions are either exactly or nearly rectilineal; the artificial ſemitones by which the full notes are divided form another parallel line; but the diſtances between each of them are much greater than thoſe between the notes of the natural ſcale, as they take their places, not directly oppoſite to the notes which they are intended to heighten or depreſs, but in a ſituation between the higheſt and loweſt, to ſhow that in aſcending they are ſharps to the one, and in deſcending flats to the other. This ſtructure, however, is doubly inconvenient; for it not only increaſes the labour and difficulty of the performer but renders ſome muſical operations impracticable, which upon the *Harmonica*, as conſtituted by Dr Franklin, may be executed with eaſe and pleaſure. In this fabric, if properly formed and accurately tuned, the inſtrument is equally adapted to harmony and melody. But as no material ſtructure could ever yet be brought to the perfection even of human ideas, this inſtrument ſtill in ſome meaſure, retains the perverſe nature of its original ſtamina. Hence it is not without the utmoſt difficulty that the glaſſes can be tuned by grinding; and the leaſt conceivable redundancy or defect renders the diſcord upon this inſtrument more conſpicuous and intolerable than upon any other. Hence likewiſe that inexpreſſible delicacy to be obſerved in the manner of the friction by which the ſound is produced; or if the touch be too gentle, it cannot extort the tone; and if too ſtrong beſides the mellow and delicate ſound which ought to be heard, we likewiſe perceive the finger jarring upon the glaſs, which mingled with thoſe ſofter ſounds by which the ſenſes had been ſoothed, gives a feeling ſimilar to iron grating upon iron, but more diſagreeable. In wind-inſtruments the operation of the tongue, in harpſichords the ſtroke of the quill, and on the violin the motion of the bow, gives that ſtrong and ſenſible interruption of ſound which may be called *articulation*, and which renders the rhythmus or meaſure of an air more perceptible: but upon the glaſſes, the touch of the finger is too ſoft to divide the notes with ſo much force, unleſs the mind be ſteadily attentive, they ſeem to melt one into another, by which means the idea of rhythmus is almoſt loſt. There is no way of performing a ſlur but by forbearing to ſtop the firſt ſound, when that which is immediately ſubſequent commences. Thus, when the ſlur is of any length, and regularly deſcends, or riſes by the interval of a ſecond, all the notes in the ſlur muſt be heard together, and produce no agreeable diſſonance; yet if it riſes or deſcends by perfect chords, the effect is pleaſing. The open ſhake, or thrill, is anotheir unhappy operation upon muſical glaſſes; which can only be performed by the alternate pulſations of two continued ſounds; differing from each other only by a note or ſemitone. But as theſe pulſations thus managed cannot be diſtinct, the reſult is far from being pleaſant; nor is there any ſuccedaneum for the cloſe ſhake, which in the violin is performed by alternately depreſſing the ſtring to the finger-board, and ſuffering it to riſe without entirely removing the finger from it, and which by giving the note that tremulous ſound produced by the human voice affected with grief, is a grace peculiarly adapted to pathetic and plaintive airs.

We proceed, however, to a farther account of the ſame inſtrument, extracted from the Annual Regiſter, vol. iv. p. 149.

“ Beſides thoſe tones (ſays the author of that account) which every elaſtic ſtring produces by a vibration of all its parts, it is capable of another ſet of tones, in which only a part of the ſtring is ſuppoſed to vibrate. Theſe ſounds are produced by the lighteſt touches, either by air, as in Oſwald's lyre, or by rubbing the bow in the ſofteſt manner on the ſtring of a fiddle.

“ Analogous to theſe ſounds are thoſe produced by bells: in thoſe laſt, beſides thoſe tones produced by their elliptical vibrations, there are a ſet of tones which may be brought by gently rubbing their edges, and in which the whole inſtrument does not appear to vibrate in all its parts as before.

“ Take, for inſtance, a bell finely poliſhed at the edges; or, what will perhaps be more convenient, a drinking-glaſs: let the edges be as free from any thing oily as poſſible; then, by moiſtening the finger in water (I have found alum-water to be beſt), and rubbing it circularly round the edge of the glaſs, you will at length bring out the tone referred to.

“ This note is poſſeſſed of infinite ſweetneſs; it has all the excellencies of the tone of a bell without its defects. It is loud, has a ſufficient body, is capable of being ſwelled and continued at pleaſure; and, beſides, has naturally that vibratory ſoftening which muſicians endeavour to imitate by mixing with the note to be played a quarter-tone from below.

“ To vary theſe tones, nothing more is required than to procure ſeveral bells or glaſſes of different tones, tuned as nearly as poſſible, which may be done by thinning the edges of either: or, for immediate ſatisfaction, the glaſſes may be tuned by pouring in water; the more water is poured in, the graver the tone will be.

“ Let us ſuppoſe then a double octave of thoſe glaſſes, thus tuned, to be procured. Any common tune may be executed by the fingers rubbing upon each glaſs ſucceſſively; and this I have frequently done without the leaſt difficulty, only choſing thoſe tunes which are ſlow and eaſy. Here then are numbers of delicate tones, with which muſicians have been till very lately unacquainted; and the only defect is, that they cannot be made to follow each other with that celerity and eaſe which is requiſite for melody. In order to remedy this, I took a large drinking-glaſs, and by means of a wheel and gut, as in the electrical machine, made it to turn upon its axis with a moderately quick but equable motion; then moiſtening the finger as before, nothing more was required than merely to touch the glaſs at the edge, without any other motion, in order to bring out the tone.

“ Inſtead of one glaſs only turning in this manner, if the whole number of glaſſes were ſo fixed as to keep continually turning by means of a wheel, it follows, that upon every touch of the finger a note would be expreſſed; and thus, by touching ſeveral glaſſes at once, an harmony of notes might be produced, as in an harpſichord.

“ As I write rather to excite than ſatisfy the curious, I ſhall not pretend to direct the various ways this number of glaſſes may be contrived to turn; it may be ſufficient to ſay, that if the glaſſes are placed in the ſegment of a circle, and then a ſtrap, as in a cutler's wheel, be ſuppoſed to go round them all, the whole number will by this means be made to turn by means of a wheel.

“ Inſtead of the finger, I have applied moiſtened leather to the edge of the glaſs, in order to bring out the tone: but, for want of a proper elaſticity, this did not ſucceed. I tried cork, and this anſwered every purpoſe of the finger; but made the tone much louder than the finger could do. Inſtead, therefore, of the finger, if a number of corks were ſo contrived as to fall with a proper degree of preſſure on the edge of the glaſs, by means of keys like the jacks of an organ, it is evident, that in ſuch a caſe a new and tolerably perfect inſtrument would be produced; not ſo loud indeed as ſome, but infinitely more melodious than any.

“ The mouths of the glaſſes or bells uſed in this experiment ſhould not reſemble the mouth of a trumpet, but ſhould rather come forward with a perpendicular edge. The corks uſed in this caſe ſhould be ſmooth, even free from thoſe blemiſhes which are uſually found in them, and at the ſame time the more elaſtic the better.”

In the two accounts here given ſeems to be comprehended every thing valuable which has been ſaid upon the ſubject. It remains, however, our permanent opinion, that the form and ſtructure deſigned and conſtituted by Dr Franklin is by much the moſt eligible; nor can we admit, that a cork, however ſucceſsfully applied, will produce the ſame mellowneſs and equality of tone in general with the finger. It appears to us, that, by this kind of voluntary attrition, a note may be ſunk or ſwelled with much more art and propriety than by the ſubſtitution of any thing elſe extrinſic to the hand; and when chords are long protracted, that degree of friction, which renders every ſound in the chord ſenſible to the ear, without harſhneſs, muſt be the moſt agreeable. For this reaſon, likewiſe, we ſhould recommend alum-water in preference to chalk.

From what has already been ſaid, it will eaſily be perceived, that this inſtrument requires to be tuned with the niceſt degree of delicacy which the laws of temperament will poſſibly admit. For theſe laws the reader will naturally have recourſe to the article MUSIC †, in this Dictionary; where, from M D'Alembert is given a plain and ſatisfactory account, both of the method propoſed by Rameau, and of that eſtabliſhed in common practice, without anticipating the experience and taſte of the reader, by dictating which of theſe plans is preferable. To thoſe who have occaſion to tune the inſtrument, it may likewiſe be uſeful to peruſe the detached article TEMPERAMENT in this Work. Without recapitulating the different rules of alteration preſcribed in theſe accounts, we ſhall preſuppoſe the reader acquainted with them; and proceed to deſcribe how, under their influence, the *Harmonica* may be tuned. But it is previouſly expedient to obſerve, that the ſame rules which conduct the proceſs of tuning a harpſichord, will be equally effectual in tuning the *Harmonica*; with this only difference, that greater delicacy in adjuſting the chords ſhould, if practicable, be attempted.

There are different notes from whence the procedure of tuning may commence. *La* or A, which is the key that pretty nearly divides the harpſichord, is choſen by ſome; this *la* in common ſpinets is 24 natural keys from the bottom, and 13 from the top: and the *ut* above it, or ſecond C upon the G cleff, by others. This laſt we ſhould rather adviſe, becauſe we imagine thoſe intervals

† Chap. viii. art. 64.

intervals which we have called *ſeconds major* to be more juſt through the whole octave, when the courſe of tuning is begun by a natural ſemitone. The initiate, therefore, may begin by turning the ſecond *ut* of his *Harmonica*, or C above the treble cleff, in uniſon with its correſpondent C upon the harpſichord or any other inſtrument in concert-pitch; then, deſcending to its octave below, adjuſt it with the *ut* above, till every pulſation if poſſible be loſt, and the ſounds rendered ſcarcely diſtinguiſhable when ſimultaneouſly heard. To the loweſt note of this octave he muſt tune the *ſol* or G immediately above it, by a fifth, ſtill obſerving the laws of temperament: To this G, the *re*, or D immediately above it, by the ſame chord: To the *re*, or D above, its octave below: To this, by a fifth, the *la* or A immediately above it: To *la*, the *mi*, or E aſcending in the ſame proportion: To *mi*, its octave below: To this, the *ſi* or B immediately above it by a fifth: To the firſt *ut*, or C, which was tuned, the *fa* or F immediately below by the ſame chord.

That the practitioner may be ſtill more ſecure in the juſtice and propriety of his procedure, he may try the thirds of the notes already adjuſted, and alter, as much as is conſiſtent with the fifths and octaves, ſuch among theſe thirds as may ſeem grating and diſagreeable to his ear. Thus far having accompliſhed his operation, he may tune all the other natural notes whether above or below by octaves. His next concern is with the ſemitones. And here it will be ſuggeſted by common ſenſe, that as in all inſtruments with fixed ſcales the ſharp of a lower muſt likewiſe anſwer for the flat of a higher tone, the ſemitone ought as nearly as poſſible to divide the interval. He may begin with *la* or A ſharp; which *la* in its natural ſtate is a third minor beneath the *ut* or C, from whence he began in the natural ſcale. This ſemitone ſhould correſpond with the F natural immediately above by a fifth. To it may be tuned the *re* or D ſharp immediately below by a ſimilar chord: to D ſharp, its octave above: To *ſi* or B natural, immediately above the *la* or A firſt mentioned, may be adjuſted the F or *fa* ſharp immediately above it: To this its octave below: To that octave, the C or *ut* ſharp above by a fifth: To the C ſharp, its octave below: To this, by a fifth, the G or *ſol* ſharp above. Between this G ſharp and the D ſharp immediately above it, the fifth will probably be too ſharp; but if the others are juſtly tuned, that diſcord will not be extremely offenſive; and it is a neceſſary conſequence of temperament. The reſt of the ſharps and flats, like their naturals, whether aſcending or deſcending, may be tuned by their octaves.

The notes, with their chords, may be expreſſed by letters and figures, thus; where, however, it muſt be obſerved, that the higher notes of any chord are marked with larger capitals. It ſhould likewiſe be remarked, that the figures are not expreſſive of the different ratios which the notes bear one to another, conſidered with reſpect to their vibrations; but only ſignificant of their nominal diſtances, according to the received denominations of the intervals. $\mathrm{C}\overset{8}{\mathrm{c}}$ $\overset{5}{\mathrm{c}}\mathrm{G}$ $\overset{5}{\mathrm{c}}\mathrm{D}$ $\overset{8}{\mathrm{d}}\mathrm{D}$ $\overset{5}{\mathrm{d}}\mathrm{A}$ $\overset{6}{\mathrm{a}}\mathrm{E}$ $\mathrm{E}\overset{8}{\mathrm{e}}$ $\overset{5}{\mathrm{e}}\mathrm{B}$ $\mathrm{C}\overset{5}{\mathrm{f}}$. The ſharps and flats thus, $\mathrm{a}\overset{5}{\text{※}}\mathrm{F}\natural$, $\mathrm{A}\overset{5}{\text{※}}\mathrm{d}\text{※}$, $\mathrm{d}\overset{8}{\text{※}}\mathrm{D}\text{※}$, $\mathrm{b}\overset{5}{\natural}\mathrm{F}\text{※}$, $\mathrm{F}\overset{8}{\text{※}}\mathrm{f}\text{※}$, $\mathrm{f}\overset{5}{\text{※}}\mathrm{C}\text{※}$, $\mathrm{C}\overset{8}{\text{※}}\mathrm{c}\text{※}$, $\mathrm{c}\overset{5}{\text{※}}\mathrm{G}\text{※}$. In running over the ſharps and flats as the naturals, it will likewiſe be neceſſary to try the thirds, and to alter ſuch as may offend the ear; which, if cautiouſly done, will not ſenſibly injure the other chords. —Though this article has been protracted to a length which we did not originally intend, we have however the ſatisfaction to find, that it comprehends every thing eſſential; ſo that any perſon who underſtands the nature of chords, and the practical principles of muſic as univerſally taught, may not only be able to tune his inſtrument, but to acquire its whole manœuvre, without the leaſt aſſiſtance from a maſter.

On Plate CCXXVI. is repreſented an inſtrument of this kind, made by Mr Dobb of St Paul's church-yard, London.

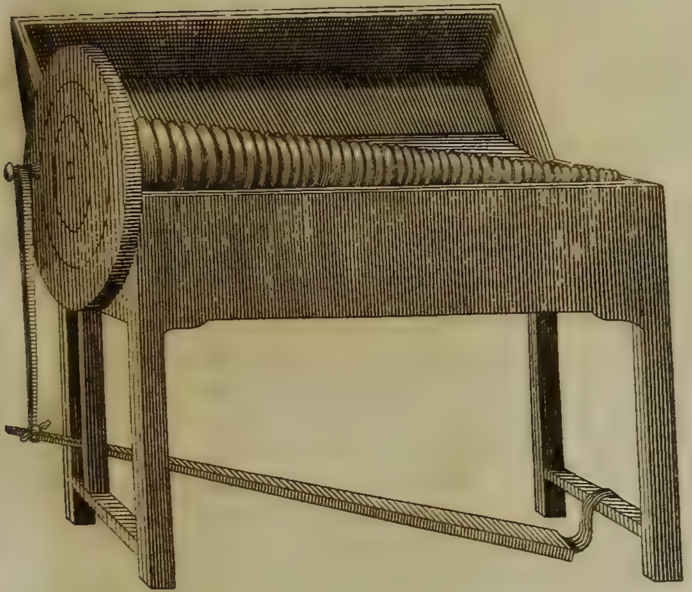
Though this topic appeared in itſelf complete in the former edition of this extenſive work, yet having ſince received from Dr Edmund Cullen of Dublin the following obſervations, and reflecting that men of muſical talents have not only different taſtes, but different powers of mechanical operation, we have thought it proper to ſubmit to the choice of our readers, either Dr Franklin's form and arrangement of the glaſſes, or that which has been adopted by Dr Cullen; but in either caſe, we would recommend it to the initiate in this inſtrument, to diſtinguiſh by colours, according to Dr Franklin, the notes and ſemitones.—We likewiſe cannot forbear to think, that the complete baſs practicable on the harmonica, is by many degrees preferable to the chords with which Dr Cullen propoſes to grace every emphatic note, with which, from the ſtructure and arrangement of his inſtrument, he is under a neceſſity of deluding inſtead of ſatisfying the ear, with the full effect of the regular procedure of the treble and baſs upon the ſame inſtrument.

This inſtrument the Doctor deſcribes as conſiſting "of 35 glaſſes of different ſizes, anſwering to ſo many diſtinct ſounds, and ranged in the manner hereafter deſcribed. They are exactly of the form of a cocoa nut when the uſual quantity of the top is cut off, or the ſugar-bowls made of cocoa-nut ſhells ſo much in uſe will give a preciſe idea of their figure. They are blown with plain long ſtalks which are fitted to wooden feet ſcrewed on a board at proper diſtances, in ſuch a manner that the circular tops of all may be in the ſame horizontal plane, at the diſtance of about an inch aſunder. Of theſe 35, 10 only are allotted for half tones; there remain therefore 25 for the diatonic ſcale. The loweſt note correſponds to G in the baſs clef; hence it extends upward to the octave above C in alt. For uniformity, take the glaſſes which are choſen gradually and regularly diminiſhing in ſize as they aſcend in tone. This, however, is not abſolutely neceſſary, as the tone of the glaſs does not entirely depend upon its ſize, but in a great meaſure upon the proportion of its different parts to one another: hence the glaſs correſponding to one note may be ſmaller than a glaſs correſponding to a note three or four tones higher: however, where it is practicable, they ſhould always be choſen gradually diminiſhing as they aſcend, both on account of the elegance of appearance, and that an equality in point of loudneſs may be preſerved; for, as every body knows, an inſtrument may be liable to great inequality in point of ſtrength, though perfectly in tune. This muſt have a very bad effect; and therefore we find performers on the violin and other inſtruments of that kind very ſolicitous about the propor

tional

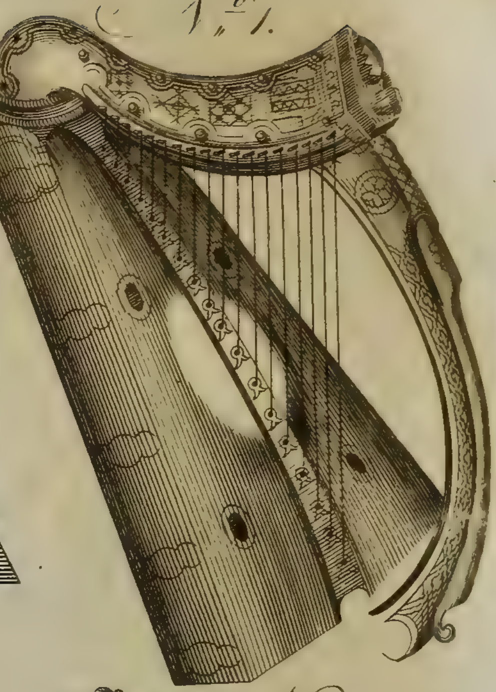
Plate CCXXVI.

Harmonica.



Harps.

N.º 1.



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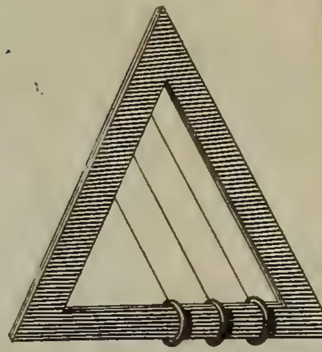
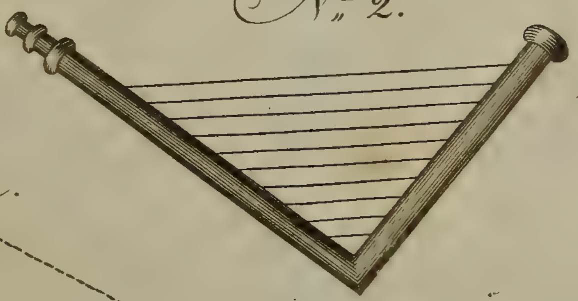


N.º 4.

N.º 2.



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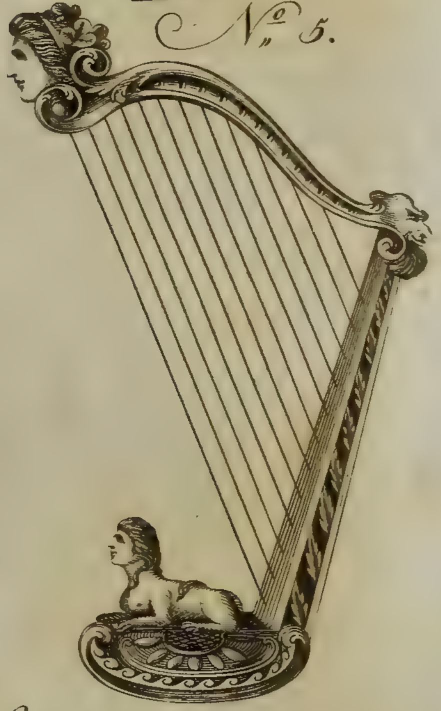
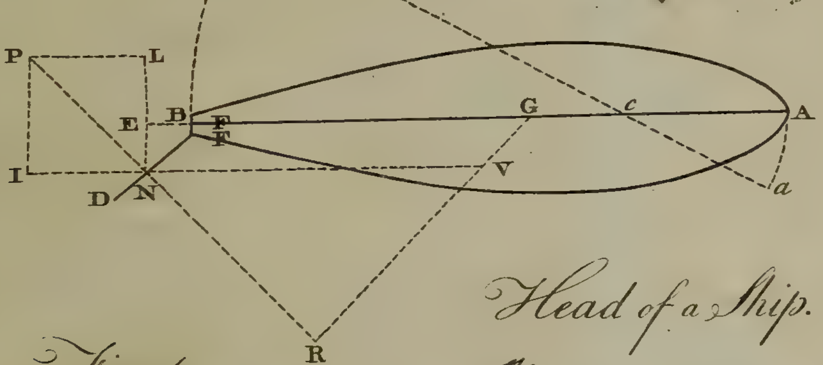


Helm.



Head of a Ship.

Fig. 1.

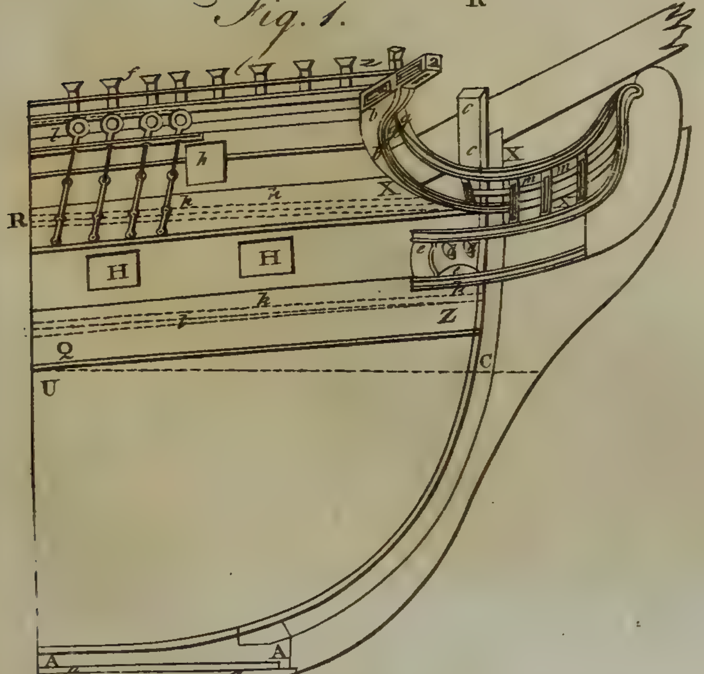
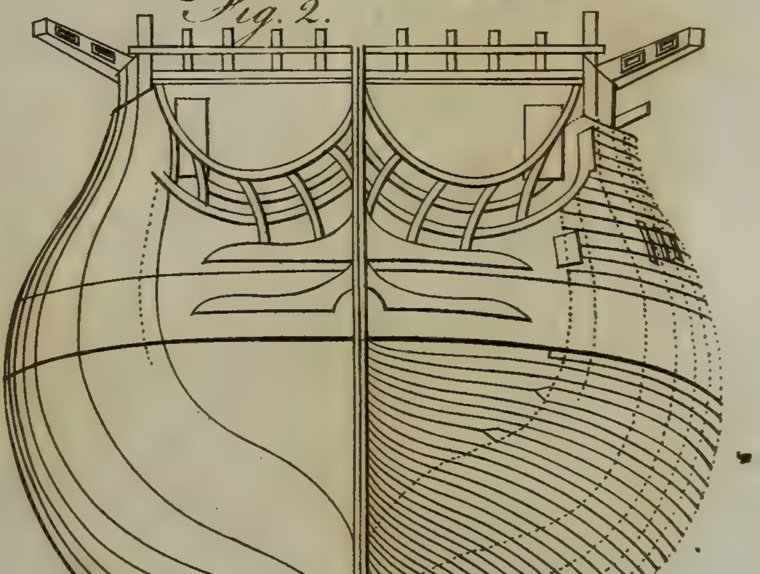


Fig. 2.



Thackara & Vallance sculp^{t}.

Harmonica.

tional thickneſs of their ſtrings. The glaſſes being choſen in the beſt manner circumſtances will permit, we proceed to arrange them. Here let me obſerve, that in general the diameter of the largeſt glaſs at its mouth is about ſeven inches, and its ſolid contents about five Engliſh pints, while the higheſt is of about $\frac{1}{4}$ inch, and its contents about $\frac{1}{3}$ of a gill: this, however, is arbitrary, and depends upon the pitch of the inſtrument. In arranging the glaſſes, we ſhall, to avoid confuſion, take the diatonic ſcale firſt, and afterwards the half tones will be eaſily underſtood. The wooden feet before mentioned are to be ſcrewed on a ſtrong board of a proper ſize, and they are diſpoſed at convenient intervals in rows perpendicular to the longeſt ſides of the rectangular board on which they ſtand. In theſe feet the glaſſes are diſpoſed in the following manner: Beginning with the loweſt note G, we fix that on the foot which ſtands in the neareſt angle of the board on the left hand, A in the next bottom in the ſame perpendicular line, B in the third; when we come to C, however, we do not place it in the ſame perpendicular line, but in the neareſt bottom of the ſecond perpendicular row to the left hand, D in the ſecond of the ſame row, E in the third; F again in the neareſt bottom of the third row, G in the ſecond of the ſame row, A in the third; B again in the neareſt bottom of the fourth row, C in the ſecond of the ſame, and ſo on. By this contrivance, it is eaſy to ſee an immenſe compaſs is obtained! ſo great a one indeed, that if the glaſſes were diſpoſed according to the old method, regularly aſcending in a line parallel to the front of the inſtrument, to take in the ſame compaſs, it muſt ſtretch to a conſiderable length, no leſs than a length equal to the ſum of all the perpendiculars we before ſpoke of, which in ordinary ſize of the glaſſes would amount to upwards of 16 feet; the inconvenience of which it is unneceſſary to dwell upon. As to the half tones, perhaps a more judicious and convenient arrangement may be thought of for them: but the preſent mode is far from inconvenient, except in ſome keys; and it is ſufficiently commodious for performing ſuch airs as are beſt ſuited to the nature and deſign of the inſtrument. After explaining the arrangement, we ſhall ſpeak ſomewhat more exactly of them. E♭ on the firſt line of the treble ſtave ſtands in the fourth bottom of the firſt perpendicular row to the left hand; F♮ on the firſt ſpace ſtands in the fourth place of the ſecond row, G♮ on the ſecond line of the treble ſtave ſtands in the fourth of the third row, C♮ on the third ſpace of the ſame ſtave ſtands in the ſame manner in the fourth row, and ſo on, aſcending to F♮ in the fifth row, G♮ in the ſixth, A♮ in the ſeventh, C♮ in the eighth. In the ninth perpendicular row, that is, the laſt to the right hand in the diatonic ſcale, ſtands C alone; but immediately behind is placed B♭ of the middle line of the treble ſtave, and again behind it D♮ of the fourth line of the treble ſtave, which finiſhes the whole. There is ſomething ſingular, and perhaps whimſical, in the diſtribution of the half tones; but it is found ſufficiently convenient; and if a better is thought of it may eaſily be adopted. In the mean time I muſt obſerve, that two of them, viz. C♮ and F♮, ſtanding immediately behind the D and G reſpectively above them, are ſingularly well fitted for performing running paſſages either up or down in the key of G. *Ex. gr.* let us ſuppoſe that we have that very common A, G, F♮, E ſemiquavers. Here the performer touches A, which is in the firſt place of the 6th row, with his left hand, G with the fore-finger of his right, F♮ with the middle, and E again with the left hand; in the ſame manner may E, D, C♮. and B, be played, or upwards by inverting the motion: thus we can with the utmoſt eaſe run either up or down two very frequent paſſages in a key, which might naturally be ſuppoſed difficult upon this inſtrument, and that with any given rapidity. I wiſh as much could be ſaid of all the other half tones of which, by the bye, ſome are altogether wanting; it is obvious, however, that they may eaſily be added, if we can find convenient places; and I apprehend even that very practicable. Be that as it may, notwithſtanding the ſeemingly inconvenient ſituation of ſome half tones, and the total want of others, pieces may be performed on this inſtrument of conſiderable rapidity. I myſelf, though very far from being an accompliſhed player, can with great eaſe go through all the parts of Fiſher's celebrated Rondeau; nay, I have heard the fifth concerto of Vivaldi played upon it with as much diſtinctneſs as upon a violin. The glaſſes are not neceſſarily choſen perfectly in tune, but are tuned by the help of a quantity of water. Here however two cautions are neceſſary: 1ſt, By no means to take a glaſs which is, when without water, flatter than the note you intend; as in that caſe you cannot remedy it, the water making the tone ſtill flatter, rather let it be ſomewhat ſharper, and you may tune it to the utmoſt nicety by a little water. The ſecond caution is, not to chooſe a glaſs which is very much ſharper than the note required; as in that caſe, ſo large a quantity of water will be required to tune it as will entirely ſmother the tone.

"This inſtrument is to be played ſomewhat in the manner of the harmonica, viz. the fingers are to be well wetted; and by the application of them to the ſide, aſſiſted by a proper motion the ſound is produced. And here I would obſerve that the proper motion is, to make the fingers follow the thumb, not the thumb follow the fingers in going round the glaſs: it is neceſſary alſo to preſerve the circular motion very exactly, as the leaſt deviation from it produces the moſt horrible ſound that can be conceived. It is likewiſe to be obſerved, that you muſt touch the ſmaller glaſſes upon the very top of the brim: and for that purpoſe the palm of the hand muſt be nearly parallel to the top of the glaſs; but in coming to the larger glaſſes, it is abſolutely neceſſary to make the fingers to touch the ſide, not the top of the glaſs; and the larger the glaſs, the more diſtant from the top muſt they be touched. Practice alone can determine this matter.

"From this diſpoſition of the glaſſes, it is eaſy to ſee that the perfect chord of C is always moſt completely in our power, namely, by uſing different fingers to the different notes at the ſame time; and although a full baſs cannot be executed upon this inſtrument, we have always a great number of accompaniments which can eaſily be introduced; more perhaps than upon any inſtrument, the organ and others of that ſpecies excepted. The thirds or fifths occaſionably can be introduced; and when done with taſte and judgment, will ſcarcely yield to a middling baſs. If to this be added a thrilling ſoftneſs of the tones, inimitable by any other ſubſtance, it will readily appear to be an inſtrument more in the true ſtyle

Harmonica.

of muſic, of that muſic which the heart acknowledges, than any that either chance or ingenuity has hitherto produced. It is indeed incapable of that whimſical ſubdiviſion to which the taſte of modern compoſers, that ſworn enemy to harmony and real muſic, leads; which ſerves no end but to exhibit the wonderful executions of a favourite performer, and to overwhelm his hearers with ſtupid admiration. This is not muſic; and upon theſe occaſions, though I acknowledge the difficulty of doing what I ſee done, I lament that the honeſt man has taken ſo much pains to ſo little purpoſe. Our inſtrument is not capable of this (at leaſt not in ſo exquiſite a degree as the harpſichord, violin, and a few others): yet if the true and original intent of muſic is not to aſtoniſh but to pleaſe, if that inſtrument which moſt readily and pleaſingly ſeizes the heart thro' the ears is the beſt, I have not a moment's heſitation in ſetting it down the firſt of all muſical inſtruments. There is but one which will in any degree bear the compariſon, or rather they are the ſame inſtrument, I mean Dr Franklin's harmonica: but I am inclined to think that the inſtrument we have been ſpeaking of has ſome ſuperiority over the harmonica. The firſt ſtriking difference is in the impracticability of executing quick paſſages on the latter; whereas it is in moſt caſes extremely eaſy on the other. Again, the very long continued vibration of the glaſs, inevitably muſt produce horrible diſcord, or at leaſt confuſion, except the piece played be ſo ſlow that the vibration of one glaſs be nearly over before the other is heard. Now, in our inſtrument, this may be remedied by laying pieces of ſponge lightly between the glaſſes, ſo as to allow them only the proper extent of vibration. This, however, is an exceptionable method: and it is much better done by the touch of the performer's finger, which inſtantly ſtops the vibration; and the uſe of this may be learned by a very little practice, the motion here being entirely voluntary: But in the harmonica, the motion being partly mechanical, *e. g.* the rotation of the glaſſes, this cannot be done; and for the ſame reaſon, in the execution of the creſcendo the harmonica is not ſo perfect as this inſtrument. Beſides, the inconvenience of tuning the half tones, as ſharps or flats, ſeparately, is as great in the harmonica as in the harpſichord. This is a very great imperfection; as half tones, being tuned at the medium, are falſe both as ſharps and as flats. The learned Dr Smith ſays, there is no leſs than one-fifth of the interval difference between the ſharp of one note and the flat of the next above; and for this purpoſe propoſes to have an harpſichord conſtructed with a ſtop, ſo as to direct the jacks to the ſharps or flats according to the prevalence of either in the piece to be played: but in our inſtrument, from its very conſtruction, this inconvenience is avoided. As to matters of convenience, the harmonica is exceedingly apt to be out of order; the glaſſes frequently break, plainly on account of the great ſtrain upon them where they join the ſpindle, and are thus with much difficulty renewed; whereas with us the loſs of a glaſs is nothing. Add to all this, that the harmonica, in point of original expence, is about five times as high as the other: although I apprehend it poſſeſſes no one advantage, except that the performer may ſit at it; whereas with our inſtrument it is convenient, if not neceſſary, to ſtand; but he muſt be a lazy muſician that gives himſelf much concern about that: And if he will ſit at our inſtrument, he may, though at the expence of much eaſe in point of execution.

Harmonica, Harmony.

“Let us now conſider ſome objections that have been made to this inſtrument. One is, that neceſſity of ſtanding, in order to do any thing capital upon it. But is not that the caſe in all inſtruments, except where the performer ſits of neceſſity? Did ever any one ſee Giardini or Fiſher play a ſolo ſitting? But for the ſatisfaction of theſe torpid gentlemen, I can faithfully aſſure them, I knew a lady who performed on this inſtrument perfectly well, though ſhe had loſt the uſe of both her legs. A more ſerious and important objection lies both to this and the harmonica, viz. the want of a ſhake. How this is ſupplied upon the harmonica, I cannot ſay, as I never ſaw it even attempted: but on our inſtrument, although a very perfect ſhake can ſcarcely be produced, ſomething ſo like it may be done as will fairly excuſe the want; and that is, by whirling the two ſtands round the note concerned with the ſhake with the utmoſt velocity, beginning the lower note a little ſooner than the other. By this means, except in very large glaſſes where the vibrations are too diſtant in time, ſuch an intermixture of the two ſounds is produced, as extremely well imitates a fine ſhake, and the dexterous performer will make the beat in a turned ſhake with a ſpare finger. This operation requires ſome dexterity; but this is a charge common to all muſical inſtruments; and I queſtion not but that the Highland bagpipe itſelf requires ſome ſort of ſkill.

“Upon the whole, I am clearly of opinion, that the harmonica, and more eſpecially this inſtrument which has as yet got no name, is the moſt exquiſite and noble preſent that the lovers of true harmony have ever yet received; and it is with much aſtoniſhment I find this invaluable treaſure almoſt entirely confined to Ireland, a country not very remarkable for muſical taſte or talents: But I hope ſoon to ſee this elegant ſpecies of muſic very generally known and practiſed over all Europe”.

HARMONY. The ſenſe which the Greeks gave to this word in their muſic is ſo much leſs eaſy to be determined, becauſe the word itſelf being originally a ſubſtantive proper, it has no radical words by which we might analyſe it, to diſcover its etymology. In the ancient treatiſes which remain to us, *harmony* appears to be that department whoſe object is the agreeable ſucceſſion of ſounds, merely conſidered as high or low; in oppoſition to the two others called *rhythmica* and *metrica*, which have their principle in time and meaſure. This leaves our ideas concerning the aptitude of ſound vague and undetermined; nor can we fix them without ſtudying for that purpoſe all the rules of the art; and even after we have done ſo, it will be very difficult to diſtinguiſh harmony from melody, unleſs we add to the laſt the ideas of rythmus and meaſure; without which, in reality, no melody can have a diſtinguiſhing character: whereas harmony is characteriſed by its own nature, independent of all other quantities except the chords or intervals which compoſe it.

It appears by a paſſage of Nichomachus, and by others, that they likewiſe gave the name of *harmony* to the chord of an octave, and to concerts of voices and inſtruments, which performed in the diſtance of an octave one from the other, and which is more commonly called *antiphone*.

Harmony, according to the moderns, is a ſucceſſion of chords agreeable to the laws of modulation. For a long time this harmony had no other principle but ſuch rules as were almoſt arbitrary, or ſolely founded on the approbation of a practiſed ear, which decided concerning the agreeable or diſagreeable ſucceſſion of chords, and whoſe determinations were at laſt reduced to calculation. But father Merſenne and M. Saveur having found that every ſound, however ſimple in appearance, was always accompanied with other ſounds leſs ſenſible, which conſtitute with itſelf a perfect chord-major; with this experiment M. Rameau ſet out, and upon it formed the baſis of his harmonic ſyſtem, which he has extended to a great many volumes, and which at laſt M. D'Alembert has taken the trouble of explaining to the public.

Signior Tartini, taking his route from an experiment which is newer and more delicate, yet not leſs certain, has reached concluſions ſimilar enough to thoſe of Rameau, by purſuing a path whoſe direction ſeems quite oppoſite. According to M. Rameau, the treble is generated by the baſs; Signior Tartini makes the baſs reſult from the treble. One deduces harmony from melody, and the other ſuppoſes quite the contrary. To determine from which of the two ſchools the beſt performances are likely to proceed, no more is neceſſary than to inveſtigate the end of the compoſer, and diſcover whether the air is made for the accompaniments, or the accompaniments for the air. At the word SYSTEM in Rouſſeau's Muſical Dictionary, is given a delineation of that publiſhed by Signior Tartini. Here he continues to ſpeak of M. Rameau, whom he has followed through the whole work, as the artiſt of greateſt authority in the country where he writes.

He thinks himſelf obliged, however, to declare, 'That this ſyſtem, however ingenious it may be, is far from being founded upon nature, an affirmation which he inceſſantly repeats: "That it is only eſtabliſhed upon analogies and congruities, which a man of invention may overturn to morrow, by ſubſtituting others more natural: that, in ſhort, of the experiments from whence he deduces it, one is detected fallacious, and the other will not yield him the conſequences which he would extort from it. In reality, when this author took it in his head to dignify with the title of *demonſtration* the reaſonings upon which he eſtabliſhed his theory, every one turned the arrogant pretence into ridicule. The Academy of Sciences loudly diſapproved a title ſo ill founded, and ſo gratuitouſly aſſumed; and M. Eſtive of the Royal Society at Montpelier, has ſhown him, that even to begin with this propoſition, That according to the law of nature, ſounds are repreſented by their octaves, and that as the octaves may be ſubſtituted for them, there was not any one thing demonſtrated, or even firmly eſtabliſhed in his pretended demonſtration." He returns to his ſyſtem.

" The mechanical principle of reſonance preſents us with nothing but independent and ſolitary chords; it neither preſcribes nor eſtabliſhes their ſucceſſion. Yet a regular ſucceſſion is neceſſary; a dictionary of ſelected words is not an oration, nor a collection of legitimate chords a piece of muſic: there muſt be a meaning, there muſt be connections in muſic as well as in language: it is neceſſary that what has preceded ſhould tranſmit ſomething of its nature to what is ſubſequent, ſo that all the parts conjoined may form a whole, and be ſtamped with the genuine character of unity.

" Now, the complex ſenſation which reſults from a perfect chord muſt be reſolved into the ſimple ſenſation of each particular ſound which compoſes it, and into the ſenſation of each particular interval which forms it, aſcertained by compariſon one with another. Beyond this there is nothing ſenſible in any chord; from whence it follows, that it is only by the relation between ſounds, and by the analogy between intervals, that the connection now in queſtion can be eſtabliſhed; and this is the genuine, the only ſource, from whence flow all the laws of harmony and modulation. If then, the whole of harmony were only formed by a ſucceſſion of perfect chords-major, it would be ſufficient to proceed by intervals ſimilar to thoſe which compoſe ſuch a chord; for then ſome one or more ſounds of the preceding chord being neceſſarily protracted into that which is ſubſequent, all the chords would be found ſufficiently connected, and the harmony would, at leaſt in this ſenſe, be one.

" But beſides that theſe ſucceſſions muſt exclude all melody by excluding the diatonic ſeries which forms its foundation, it would not arrive at the real end of the art; becauſe, as muſic is a ſyſtem of meanings like a diſcourſe, it ought, like a diſcourſe, to have its periods, its phraſes, its ſuſpenſes, its cadences, its punctuation of every kind; and becauſe the uniformity of a harmonic procedure implies nothing of all this, diatonic procedures require that major and minor chords ſhould be intermixed; and the neceſſity of diſſonances has been felt in order to diſtinguiſh the phraſes, and render the cadences ſenſible. Now, a connected ſeries of perfect chords-major can neither be productive of perfect chords-minor nor of diſſonances, nor can ſenſibly mark any muſical phraſe, and the punctuation muſt there be found entirely defective.

" M. Rameau being abſolutely determined, in his ſyſtem, to deduce from nature all the harmony practiſed among us, had recourſe for this effect, to another experiment of his own invention, of which I have formerly ſpoken, and which by a different arrangement is taken from the firſt. He pretended, that any ſimple ſound whatever afforded in it multiplies a perfect minor or flat chord, of which it was the dominant or fifth, as it furniſhed a perfect chord-major by the vibration of its aliquot parts, of which it is the tonic or fundamental ſound. He has affirmed as a certain fact, that a vocal ſtring cauſed two others lower than itſelf to vibrate through their whole extent, yet without making them produce any ſound, one to its twelfth major and the other to its ſeventeenth; and from this joined to the former fact, he has very ingeniouſly deduced not only the application of the minor mode and of diſſonances in harmony, but the rules of harmonic phraſes and of all modulation, ſuch as they are found at the words *Chord*, *Accompaniment*, *Fundamental Baſs*, *Cadence*, *Diſſonance*. *Modulation*.

" But firſt (continues Rouſſeau), the experiment is falſe. It is diſcovered, that the ſtrings tuned beneath the fundamental ſound do not entirely vibrate when this fundamental ſound is given ; but that they are divided in ſuch a manner as to return its uniſon alone, which of conſequence can have no harmonics below. It is moreover diſcovered, that the property of ſtrings in dividing themſelves, is not peculiar to thoſe which are tuned by a twelfth and ſeventeenth below the principal ſound ; but that oſcillations are likewiſe produced in the lower ſtrings by all its multiples. Whence it follows, that, the intervals of the twelfth and ſeventeenth below not being ſingular phenomena of their kind, nothing can be concluded in favour of the perfect minor chord which they repreſent.

" Though the truth of this experiment were granted, even this would by no means remove the difficulty. If, as M. Rameau alleges, all harmony is derived from the reſonance of ſonorous bodies, it cannot then be derived only from the vibrations of ſuch bodies as do not reſound. In reality, it is an extraordinary theory, to deduce from bodies that do not reſound the principles of harmony ; and it is a principle in natural philoſophy no leſs ſtrange, that a ſonorous body ſhould vibrate without reſounding, as if ſound itſelf were any thing elſe but the air impelled by theſe vibrations. Moreover, ſonorous bodies do not only produce, beſides the principal ſound, the other tones which with itſelf compoſe a perfect chord ; but an infinite number of other ſounds, formed by all the aliquot parts of the bodies in vibration; which do not enter into that perfect harmony. Why then ſhould the former ſounds produce conſonances, and why ſhould the latter not produce them, ſince all of them equally reſult from nature ?

" Every ſound exhibits a chord truly perfect, ſince it is compoſed of all its harmonics, and ſince it is by them that it becomes a ſound. Yet theſe harmonics are not heard, and nothing is diſtinguiſhed but a ſimple ſound, unleſs it be exceedingly ſtrong : whence it follows, that the only good harmony is an uniſon ; and that, as ſoon as the conſonances can be diſtinguiſhed, the natural proportion being altered, the harmony has loſt its purity.

" That alteration is in this caſe produced two different ways. Firſt, by cauſing certain harmonics to reſound, and not the others, the proportion of force which ought to prevail in all of them is altered, for producing the ſenſation of a ſingle ſound ; whence the unity of nature is deſtroyed. By doubling theſe harmonics, an effect is exhibited ſimilar to that which would be produced by ſuppreſſing all the others ; for that caſe we cannot doubt, but that, along with the generating ſound, the tones of the other harmonics which would be permitted to ſound would be heard : whereas, in leaving all of them to their natural operations, they deſtroy one another, and conſpire together in forming and ſtrengthening the ſimple ſenſation of the principal ſound. It is the ſame effect which the full ſound of a ſtop in the organ produces, when, by ſucceſſively removing the ſtopper or regiſter, the third and fifth are permitted to ſound with the principal ; for then that fifth and third, which remained abſorbed in the other ſounds, are ſeparately and diſagreeably diſtinguiſhed by the ear.

" Moreover, the harmonics which we cauſe to ſound have other harmonics pertaining to themſelves, which cannot be ſuch to the fundamental ſound. It is by theſe additional harmonics that the ſounds which produce them are diſtinguiſhed with a more ſenſible degree of harſhneſs ; and theſe very harmonics which thus render the chord perceptible, do not enter into its harmony. This is the reaſon why the moſt perfect chords are naturally diſpleaſing to ears whoſe reliſh for harmony is not ſufficiently formed ; and I have no heſitation in thinking, that even the octave itſelf might be diſpleaſing, if the mixture of male and female voices did not inure us to that interval from our infancy.

" With diſſonance it is ſtill worſe ; becauſe, not only the harmonics of the ſound by which the diſcord is produced, but even the ſound itſelf, is excluded from the natural harmony of the fundamental : which is the cauſe why diſcord is always diſtinguiſhed amongſt all the other ſounds in a manner ſhocking to the ſenſe.

" Every key of an organ, with the ſtop fully opened, gives a perfect chord with its third major, which are not diſtinguiſhed from the fundamental ſound, if the hearer is not extremely attentive, and if he does not ſound the whole ſtop in ſucceſſion ; but theſe harmonic ſounds are never abſorbed in the fundamental, but on account of the prodigious noiſe, and by ſuch a ſituation of the regiſters as may cauſe the pipes which produce the fundamental ſound to conceal by their force the other ſounds which produce theſe harmonics. Now, no perſon obſerves, nor can obſerve, this continual proportion in a concert ; ſince, by the manner of inverting the harmony, its greateſt force muſt in every inſtant be transferred from one part to another ; which is not practicable, and would deſtroy the whole melody.

" When we play upon the organ, every key in the baſs cauſes to reſound the perfect chord major ; but becauſe that baſs is not always fundamental, and becauſe the muſic is often modulated in a perfect minor chord, this perfect chord-major is rarely ſtruck with the right hand ; ſo that we hear the third minor with the major, the fifth with the triton, the ſeventh redundant with the octave, and a thouſand other cacophonies, which, however, do not much diſguſt our ears, becauſe habit renders them tractable ; but it is not to be imagined that an ear naturally juſt would prove ſo patient of diſcords, when firſt expoſed to the teſt of this harmony.

" M. Rameau pretends, that trebles compoſed with a certain degree of ſimplicity naturally ſuggeſt their own baſſes ; and that any man having a juſt, though unpractiſed ear, would ſpontaneouſly ſing that baſs. This is the prejudice of a muſician, refuted by univerſal experience. Not only would he, who has never heard either baſs or harmony, be of himſelf incapable of finding either the baſs or the harmony of M. Rameau, but they would be diſpleaſing to him if he heard them, and he would greatly prefer the ſimple uniſon.

" When we conſider, that of all the people upon earth, who have all of them ſome kind of muſic and melody, the Europeans are the only people who have a harmony conſiſting of chords, and who are pleaſed with this mixture of ſounds ; when we conſider that the world has endured for ſo many ages, whilſt, of all the nations which cultivated the fine arts, not one has found out this harmony : that not one animal, not one bird, not one being in nature, produces any other chord but the uniſon, nor any other muſic but melody: that the eaſtern languages, ſo ſonorous, ſo muſical; that the ears of the Greeks, ſo delicate, ſo ſenſible, practiſed and cultivated with ſo much art, have never conducted this people, luxurious and enamoured of pleaſure as they were, towards this harmony which we imagined ſo natural: that without it their muſic produced ſuch aſtoniſhing effects; that with it ours is ſo impotent: that, in ſhort, it was reſerved for the people of the north, whoſe groſs and callous organs of ſenſation are more affected with the noiſe and clamour of voices, than with the ſweetneſs of accents and the melody of inflections, to make this grand diſcovery, and to vend it as the eſſential principle upon which all the rules of the art were founded; when, in ſhort, attention is paid to all theſe obſervations, it is very difficult not to ſuſpect that all our harmony is nothing but a Gothic and barbarous invention, which would never have entered into our minds, had we been truly ſenſible to the genuine beauties of art, and of that which is unqueſtionably natural.

“ M. Rameau aſſerts, however, that harmony is the ſource of the moſt powerful charms in muſic. But this notion is contradictory both to reaſon and to matter of fact. To fact it is contradictory; becauſe, ſince the invention of counter-point, all the wonderful effects of muſic have ceaſed, and it has loſt its whole force and energy. To which may be added that ſuch beauties as purely reſult from harmony are only perceived by the learned; that they affect none with tranſport but ſuch as are deeply converſant in the art; whereas the real beauties of muſic, reſulting from nature, ought to be and certainly are, equally obvious to the adept and the novice. To reaſon it is contradictory; ſince harmony affords us no principle of imitation by which muſic, in forming images and expreſſing ſentiments, can riſe above its native excellence till it becomes in ſome meaſure dramatic or imitative which is the higheſt pitch of elevation and energy to which the art can aſpire; ſince all the pleaſures which we can receive from the mere mechanical influence of ſounds are extremely limited, and have very little power over the human heart.”

Thus far we have heard M. Rouſſeau, in his obſervations on harmony, with patience; and we readily grant, that the *ſyſtem of harmony* by M. Rameau is neither demonſtrated, nor capable of demonſtration But it will not follow, that any man of invention can ſo eaſily and ſo quickly ſubvert thoſe aptitudes and analogies on which the ſyſtem is founded. Every hypotheſis is admitted to poſſeſs a degree of probability proportioned to the number of phenomena for which it offers a ſatisfactory ſolution. The firſt experiment of M. Rameau is, that every ſonorous body, together with its principal ſound and its octave, gives likewiſe its twelfth and ſeventeenth major above; which being approximated as much as poſſible, even to the chords immediately repreſented by them, return to the third, fifth, and octave, or, in other words, produce perfect harmony. This is what nature when ſolicited, ſpontaneouſly gives; this is what the human ear, unprepared and uncultivated, imbibes with ineffable avidity and pleaſure. Could any thing which claims a right to our attention, and acceptance from nature be impreſſed with more genuine or more legible ſignatures of her ſanction than this? We do not contend for the truth of M. Rameau's ſecond experiment. Nor is it neceſſary we ſhould. The firſt expanded and carried into all its conſequences, reſolves the phenomena of harmony in a manner ſufficient to eſtabliſh its authenticity and influence. The difficulties for which it affords no ſolution are too few and too trivial either to merit the regard of an artiſt, or a philoſopher, as M. D'Alembert in his *elements* has clearly ſhown. The facts with which M. Rouſſeau confronts this principle, the armies of multiplied harmonics generated *in infinitum*, which he draws up in formidable array againſt it, only ſhow the thin partitions which ſometimes may divide philoſophy from whim. For, as bodies are infinitely diviſible, according to the philoſophy now eſtabliſhed, or as, according to every philoſophy, they muſt be indefinitely diviſible, each infiniteſimal of any given maſs, which are only harmonics to other principal ſounds, muſt have fundamental tones and harmonics peculiar to themſelves; ſo that if the reaſoning of Rouſſeau has any force againſt M. Rameau's experiment, the air muſt be continually diſtracted with a chaos of inappretiable harmonics, and melody itſelf muſt be loſt in the confuſion. But the truth of the matter is, that, by the wiſe inſtitution of nature, there is ſuch a conformity eſtabliſhed between our ſenſes and their proper objects, as muſt prevent all theſe diſagreeable effects. Rouſſeau and his opponent are agreed in this, that the harmonics conſpire to form one predominant ſound; and are not to be detected but by the niceſt organs, applied with the deepeſt attention. It is equally obvious, that, in an artificial harmony, by a proper management of this wiſe precaution of nature, diſſonances themſelves may be either entirely concealed or conſiderably ſoftened. ſo that, ſince by nature ſonorous bodies in actual vibration are prediſpoſed to exhibit perfect harmony; and ſince the human ear is, by the ſame wiſe regulation, fabricated in ſuch a manner as to perceive it; the harmonical chaos of M. Rouſſeau may be left to operate on his own brain, where it will probably meet with the warmeſt reception it can expect to find*. Nor does it avail him to pretend, that before the harmonics can be diſtinguiſhed, ſonorous bodies muſt be impelled with a force which alters the chords, and deſtroys the purity of the harmony; for this poſition is equally falſe both in theory and practice. In theory, becauſe an impulſe, however forcible, muſt proportionally operate on all the parts of any ſonorous body, ſo far as it extends: in practice, becauſe the human ear actually perceives the harmony to be pure. What effects his various manœuvres upon the organ may have, we leave to ſuch as have leiſure and curioſity enough to try the experiments: but it is apprehended, that when tried, their reſults will leave the ſyſtem of Rameau, particularly as remodelled by D'Alembert, in its full force.

Of all the whims and paradoxes maintained by this philoſopher, none is more extravagant than his aſſertion, that every chord, except the ſimple uniſon, is diſpleaſing to the human ear: nay, that we are only reconciled to octaves themſelves by being inured to hear them from our infancy. Strange, that nature ſhould have fixed this invariable proportion between male and female voices, whilſt at the ſame time ſhe inſpired the hearers with ſuch violent prepoſſeſſions againſt

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*M. Rouſſeau was alive when this article was written.

gainſt it as were invincible but by long and confirmed habit! The tranſlator of *D'Alembert's Elements*, as given under the article Music in this Dictionary, has been at peculiar pains to inveſtigate his earlieſt recollections upon this ſubject; and has had ſuch opportunities, both of attending to his original perceptions, and of recogniſing the fidelity of his memory, as are not common. He can remember, even from a period of early childhood, to have been pleaſed with the ſimpleſt kinds of artificial harmony; to have diſtinguiſhed the harmonics of ſonorous bodies with delight; and to have been ſtruck with horror at the ſound of ſuch bodies as, by their ſtructure, or by the cohenſion of their parts, exhibited theſe harmonics falſe. This is the chief, if not the only cauſe, of the tremendous and diſagreeable ſenſation which we feel from the ſound of the Chineſe ghong. The ſame horrible cacophony is frequently, in ſome degree, produced by a drum unequally braced: from this ſound the tranſlator often remembers to have ſtarted and ſcreamed, when carried through the ſtreets of the town in which he was born in the arms of his nurſery maid; and as he is conſcious, that the acouſtic organs of many are as exquiſite as his own, he cannot doubt but they may have had the ſame ſenſations, though perhaps they do not recollect the facts. So early and ſo nicely may the ſenſations of harmony and diſcord be diſtinguiſhed. But after all, it ſeems that harmony is no more than a modern invention, and even at this late period only known to the Europeans. We ſhould, however, be glad to know, from what oracle our philoſopher learned that harmony was not known to antiquity. From what remains of their works, no proof of this poſition can be derived; and we have at leaſt mentioned one probability againſt it in our notes to the Preliminary Diſcourſe to the article Music, (ſee note B.) But tho' Rouſſeau's mighty objections were granted, that harmony can only be endured by ſuch ears as are habitually formed and cultivated; that the period of its prevalence has been ſhort, and the extent of its empire limited to Europe; ſtill his concluſion, that it is a Gothic and barbarous invention, is not fairly deducible even from theſe premiſes. Muſt we affirm that epic poetry has no foundation in nature, becauſe, during the long interval which happened from the beginning of the world to the deſtruction of Troy, no epic Poem ſeems to have appeared? Or becauſe a natural and mellifluous verſification is leſs reliſhed by an unpoliſhed taſte, than the uncouth rhymes of a common ballad, ſhall we infer, that the power of numbers is merely ſuppoſititious and arbitrary? On the contrary, we will venture to affirm, that though harmony cannot, as Rameau ſuppoſes, be mathematically demonſtrated from the nature and vibrations of ſonorous bodies; yet the idea of its conſtituent parts, and of their coaleſcence, is no leſs eſtabliſhed, no leſs preciſe and definite, than any mode or property of ſpace or quantity to be inveſtigated by geometrical reſearches or algebraical calculations. It is certain, that the mimetic or imitative power of muſic chiefly conſiſts in melody; but from this truth, however evident, it cannot be fairly deduced, that harmony is abſolutely unſuſceptible of imitation. Perhaps every muſical ſound, even the moſt ſimple, and all modulations of ſound, are more or leſs remotely connected with ſome ſentiment or paſſion of the human heart. We know that there are inſtinctive expreſſions of pain or pleaſure in their various modes and degrees, which when uttered by any ſenſitive, and perceived by any conſcious being, excite in the mind of the percipient a feeling ſympathetic with that by which they are prompted. We likewiſe know from experience, that all artificial ſounds modulated in the ſame manner, have ſimilar, though not equal, effects. We have ſeen, that, in order to render harmony compatible with itſelf the melody of each part muſt be congenial; and, for that reaſon, one kindred melody reſult from the whole. So far, therefore, as any compoſer has it in his power to render the general melody homogeneous; ſo far the imitation may be preſerved. and even heightened: for ſuch objects as are majeſtic and auguſt, or the feelings which they excite are more aptly expreſſed by a compoſition of kindred ſounds, than by any ſimple tone whatever. They who ſuppoſe the mimetic powers of muſic to be conſumated in the imitation of mere unmeaning ſounds or degrees of motion, muſt entertain limited and unworthy ideas of its province. It is naturally a repreſentative almoſt of every ſentiment or affection of the ſoul; and, when this end is gained, the art muſt have reached its higheſt perfection, and produced its nobleſt effects. But theſe effects, however ſenſible among the ancients, may in us be ſuperſeded by other cauſes which remain yet unexplored. Theatrical performances are likewiſe, by them ſaid to have produced the moſt wonderful effects; yet we do not recognize amongſt ourſelves, though we have dramatic entertainment perhaps not inferior to theirs.

Rouſſeau proceeds to tell us that among the ancients the *enharmonic* ſpecies of muſic was ſometimes called *harmony*.

Direct Harmony, is that in which the baſs is fundamental, and in which the upper parts preſerve among themſelves, and with that fundamental baſs, the natural and original order which ought to ſubſiſt in each of the chords that compoſe this harmony.

Inverted Harmony, is that in which the fundamental or generating ſound is placed in ſome of the upper parts and when ſome other ſound of the chord is transferred to the baſs beneath the others.

Harmony of the Spheres, or *Celeſtial Harmony* a ſort of muſic much talked of by many of the ancient philoſophers and fathers, ſuppoſed to be produced by the ſweetly tuned motions of the ſtars and planets. This harmony they attributed to the various proportionate impreſſion of the heavenly globes upon one another, acting at proper intervals. It is impoſſible, according to them, that ſuch prodigious large bodies, moving with ſo much rapidity, ſhould be ſilent: on the contrary, the atmoſphere, continually impelled by them, muſt yield a ſet of ſounds proportionate to the impreſſion it receives; conſequently, as they do not run the ſame circuit nor with one and the ſame velocity, the different tones ariſing from the diverſity of motions, directed by the hand of the Almighty, muſt form an admirable ſymphony or concert.

They therefore ſuppoſed that the moon, as being the loweſt of the planets, correſponded to *mi*; Mercury, to *fa*; Venus to *ſol*; the Sun, to *la*; Mars, to

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ſi; Jupiter, to *ut*: Saturn, to *re*; and the orb of the fixed ſtars, as being the higheſt of all, to *mi*, or the octave.

HARMOSTES, or Harmosta, in antiquity, a ſort of magiſtrate among the Spartans, whereof there were ſeveral, whoſe buſineſs was to look to the building of citadels, and repairing the forts and fortifications of the cities.—The word is αρμοϛης, formed of αρμοζω, *apto, concino*, "I adapt, concert," &c.

HARMOSYNIANS, αρμοσυνοι, in antiquity, were magiſtrates among the Spartans, who, after the death of Lycurgus, were appointed to enforce the obſervance of that law of the Spartan legiſlator which required married women to wear a veil when they appeared in the ſtreets, whereby they were diſtinguiſhed from ſingle females, who were allowed to appear abroad with their faces uncovered.

HARNESS, a complete armour, or the whole equipage and accoutrements of a cavalier heavily armed; as caſque, cuiraſs, &c. The word is formed of the French *harnois*; which ſome derive from the Greek αρνακις, "a lamb's ſkin," becauſe they anciently covered themſelves therewith. Du Cange obſerves, that the word *harneſium* is uſed in the corrupt Latin in the ſame ſenſe, and that it comes from the High Dutch *harnaſs* or *harniſch*. Others derive it from the Italian *arneſe*; others from the Celtic *harnes*, "a cuiraſs."

Under king Richard II. it was expreſsly forbidden all men to ride in harneſs with launcegays. *Vide* ſtat. 7 Ric. II. cap. 13. In the ſtatute 2 Hen. VI. cap. 14. harneſs ſeems to include all kinds of furniture for offence as well as defence, both of men and horſe; as ſwords, buckles for belts, girdles, &c.

Harness is alſo uſed for the furniture put on a horſe to draw in a coach or waggon, or other carriage; ſuch as collars, leathers, traces, &c.

HARO, Harou, or *Harol*, in the Roman cuſtoms.—*Clamour de haro* is a cry or formula of invoking the aſſiſtance of juſtice againſt the violence of ſome offender, who upon hearing the word *haro* is obliged to deſiſt, on pain of being ſeverely puniſhed for his outrage, and to go with the party before the judge.

The word is commonly derived of *ha* and *roul*, as being ſuppoſed an invocation of the ſovereign power; to aſſiſt the weak againſt the ſtrong, on occaſion of Raoul firſt duke of Normandy, about the year 912, who rendered himſelf venerable to his ſubjects by the ſeverity of his juſtice; ſo that they called on him even after his death when they ſuffered any oppreſſion. Some derive it from Harola king of Denmark, who in the year 826 was made grand conſervator of juſtice at Mentz. Others from the Daniſh *aa rau*, q. d. "help me;" a cry raiſed by the Normans in flying from a king of Denmark named Roux, who made himſelf duke of Normandy. The letters of the French chancery have uſually this clauſe, *Non obſtant clameur de haro*, &c.

The haro had anciently ſuch vaſt power, that a poor man of the city of Caen named Aſſelin, in virtue hereof, arreſted the corps of William the Conqueror, in the middle of the funeral proceſſion, till ſuch time as his ſon Henry had paid the value of the land in queſtion, which was that whereon the chapel was built wherein he was interred.

Harold, Harp.

HAROLD, the name of two Engliſh kings. See England, n° 77, 83.

HARP, a muſical inſtrument of the ſtringed kind, of a triangular figure, and held upright between the legs of the performer.

Papias, and Du Cange after him, will have the harp to have taken its name from the Arpi, a people of Italy, who were ſuppoſed the firſt that invented it; and from whom, they ſay, it was borrowed by other nations. Menage, &c. derive the word from the Latin *harpa*, and that from the German *herp* or *harp*. Others bring it from the Latin *carpo*, becauſe touched or thrummed with the fingers. Dr Hickes derives it from *harpa* or *hearpa*, which ſignify the ſame thing; the firſt in the language of the Cimbri, the ſecond in that of the Anglo-Saxons. The Engliſh prieſt who wrote the life of St Dunſtan, and who lived with him in the tenth century, ſays, cap. ii. n. 12. *Sumpſit ſecum ex more citharam ſuam, quam paterna lingua* hearpam *vocamus*; which intimates the word to be Anglo-Saxon.

The harp was the favourite muſical inſtrument of the Britons and other northern nations in the middle ages; as is evident from their laws, and from every paſſage in their hiſtory, in which there is the leaſt alluſion to muſic. By the laws of Wales, a harp was one of the three things that were neceſſary to conſtitute a gentleman, *i. e.* a freeman; and none could pretend to that character who had not one of theſe favourite inſtruments, or could not play upon it. By the ſame laws, to prevent ſlaves from pretending to be gentlemen, it was expreſsly forbidden to teach, or to permit, them to play upon the harp: and none but the king, the king's muſicians, and gentlemen, were allowed to have harps in their poſſeſſion. A gentleman's harp was not liable to be ſeized for debt; becauſe the want of it would have degraded him from his rank, and reduced him to a ſlave. The harp was in no leſs eſtimation and univerſal uſe among the Saxons and Danes. Thoſe who played upon this inſtrument were declared gentlemen by law; their perſons were eſteemed inviolable, and ſecured from injuries by very ſevere penalties; they were readily admitted into the higheſt company, and treated with diſtinguiſhed marks of reſpect wherever they appeared.

There is ſome diverſity in the ſtructure of harps. That called the *triple harp* has 97 ſtrings or chords in three rows, extending from C in the tenor cliff to double G in alt, which make five octaves: the middle row is for the ſemitones, and the two outſide rows are perfect uniſons. On the baſs ſide, which is played with the right hand, there are 36 ſtrings; on the treble ſide, 26; and in the middle row, 35 ſtrings. There are two rows of pins or ſcrews on the right ſide, ſerving to keep the ſtrings tight in their holes, which are faſtened at the other end to three rows of pins on the upper ſide. The harp, within the laſt 40 years, has been in ſome degree improved by the addition of eight ſtrings to the uniſon, *viz.* from E to double F in alt. This inſtrument is ſtruck with the finger and thumb of both hands. Its muſic is much like that of the ſpinet, all its ſtrings going from ſemitone to ſemitone; whence ſome call it an *inverted ſpinet*. It is capable of a much greater degree of perfection than the lute.

There are among us two ſorts of this inſtrument, *viz.* the *Welch harp*, being that juſt deſcribed; and the *Iriſh harp*. Plate CCXXVI. n° 1. repreſents the harp of Brian Boiromh, king of all Ireland, ſlain in battle with the Danes A. D. 1014, at Clontarf. His ſon Donagh having murdered his brother Teige, A. D. 1023, and being depoſed by his nephew, retired to Rome, and carried with him the crown, harp, and other regalia of his father; which he preſented to the Pope in order to obtain abſolution. Adrian IV. ſurnamed Breakſpear, alleged this circumſtance as one of the principal titles he claimed to this kingdom in his bull transferring it to Henry II. Theſe regalia were kept in the Vatican till the pope ſent the harp to Henry VIII. with the title of Defender of the Faith; but kept the crown, which was of maſſive gold. Henry gave the harp to the firſt earl of Clanricard; in whoſe family it remained till the beginning of this century, when it came by a lady of the De Burgh family into that of Mac Mahon of Clenagh in the county of Clare, after whoſe death it paſſed into the poſſeſſion of commiſſioner Mac Namara of Limerick. In 1782 it was preſented to the right honourable William Conyngham, who depoſited it in Trinity college library. It is 32 inches high, and of extraordinary good workmanſhip; the ſounding-board is of oak, the arms of red ſally; the extremity of the uppermoſt arm in part is capt with ſilver, extremely well wrought and chiſſeled. It contains a large cryſtal ſet in ſilver, and under it was another ſtone now loſt. The buttons or ornamental knobs at the ſides of this arm are of ſilver. On the front arm are the arms chaſed in ſilver of the O'Brien family, the bloody hand ſupported by lions. On the ſides of the front arm within two circles are two Iriſh wolf dogs cut in the wood. The holes of the ſounding board where the ſtrings entered are neatly ornamented with eſcutcheons of braſs carved and gilt: the larger ſounding-holes have been ornamented, probably with ſilver, as they have been the object of theft. This harp has 28 keys, and as many ſtring-holes, conſequently there were as many ſtrings. The foot-piece or reſt is broken off, and the parts round which it was joined are very rotten. The whole bears evidence of an expert artiſt.

King David is uſually painted with a harp in his hands; but we have no teſtimony in all antiquity that the Hebrew harp, which they call *chinnor*, was any thing like ours. On a Hebrew medal of Simon Maccabæus we ſee two ſorts of muſical inſtruments; but they are both of them very different from our harp, and only conſiſt of three or four ſtrings. All authors agree, that our harp is very different from the lyra, cithara, or barbiton, uſed among the Romans. Fortunatus, lib vii. carm. 8. witneſſes, that it was an inſtrument of the barbarians:

Romanuſque lyra, plaudat tibi barbarus harpa;
Græcus Achilliacha, crotta Britanna canat.

Of ancient harps, two are repreſented on the ſame plate.—N° 2. is a *trigonum* or triangular harp. It is taken from an ancient painting in the muſeum of the king of Naples, in which it is placed on the ſhoulder of a little dancing Cupid, who ſupports the inſtrument with his left hand and plays upon it with his right. The trigonum is mentioned by Athenæus, lib. iv. and by Julius Pollux, lib. iv. cap. 9. According to Athenæus, Sophocles calls it a *Phrygian inſtrument*; and one of his dipnoſophiſts tells us, that a certain muſician, named *Alexander Alexandrinus*, was ſuch an admirable performer upon it, and had given ſuch proofs of his abilities at Rome, that he made the inhabitants μυσομανιεν, "muſically mad." N° 3. and 4. are varieties of the ſame inſtrument. N° 5. is the Theban harp, according to a drawing made from an ancient painting in one of the ſepulchral grottos of the firſt kings of Thebes, and communicated by Mr Bruce to Dr Burney*. The performer is clad in a habit made like a ſhirt, ſuch as the women ſtill wear in Abyſſinia, and the men in Nubia. It reaches down to his ancles; his feet are without ſandels, and bare; his neck and arms are alſo bare; his looſe white ſleeves are gathered above his elbows; and his head is cloſe ſhaved. His left hand ſeems employed in the upper part of the inſtrument among the notes in *alto*, as if in an arpeggio; while, ſtooping forwards, he ſeems with his right hand to be beginning with the loweſt ſtring, and promiſing to aſcend with the moſt rapid execution: this action, ſo obviouſly rendered by an indifferent artiſt, ſhows that it was a common one in his time; or, in other words, that great hands were then frequent, and conſequently that muſic was well underſtood and diligently followed.

On this inſtrument Dr Burney makes the following obſervations: "The number of ſtrings, the ſize and form of this inſtrument, and the elegance of its ornaments, awaken reflections, which to indulge would lead us too far from our purpoſe, and indeed out of our depth. The mind is wholly loſt in the immenſe antiquity of the painting in which it is repreſented. Indeed the time when it was executed is ſo remote, as to encourage a belief, that arts, after having been brought to a great perfection, were again loſt and again invented long after this period.—With reſpect to the number of ſtrings upon this harp, if conjectures may be allowed concerning the method of tuning them, two might be offered to the reader's choice. The firſt idea that preſented itſelf at the ſight of 13 ſtrings was, that they would furniſh all the ſemitones to be found in modern inſtruments within the compaſs of an octave, as from C to *c*, D to *d*, or E to *e*. The ſecond idea is more Grecian, and conformable to antiquity; which is, that if the longeſt ſtring repreſented *proſlambanomenos*, or D, the remaining 12 ſtrings would ſupply all the tones, ſemitones, and quarter-tones, of the diatonic, chromatic, and enharmonic genera of the ancients, within the compaſs of an octave: but for my part, I would rather incline to the firſt arrangement, as it is more natural, and more conformable to the ſtructure of our organs, than the ſecond. For with reſpect to the genera of the Greeks, though no hiſtoric teſtimony can be produced concerning the invention of the diatonic and chromatic, yet ancient writers are unanimous in aſcribing to Olympus the Phrygian the firſt uſe of the enharmonic: and though in the beginning, the melody of this genus was ſo ſimple and natural as to reſemble the wild notes and rude eſſays of a people not quite emerged from barbariſm; yet in after-times it became overcharged with finical fopperies and fanciful beauties, ariſing from ſuch minute diviſions of the ſcale as had no other merit than the great difficulty of forming them. It ſeems a matter of great wonder, with ſuch a model before their eyes as the Theban harp, that the form and manner of uſing

* Vide *Burney's Hiſt. of Muſic*, p. 224.

uſing ſuch an inſtrument ſhould not have been perpetuated by poſterity: but that, many ages after, another of an inferior kind, with fewer ſtrings, ſhould take place of it. Yet if we conſider how little we are acquainted with the uſe and even conſtruction of the inſtruments which afforded the greateſt delight to the Greeks and Romans, or even with others in common uſe in a neighbouring part of Europe only a few centuries ago, our wonder will ceaſe; eſpecially if we reflect upon the ignorance and barbariſm into which it is poſſible for an ingenious people to be plunged by the tyranny and devaſtation of a powerful and cruel invader."

Bell-Harp, a muſical inſtrument of the ſtring kind, thus called from the common players on it ſwinging it about, as a bell on its baſis.

It is about three feet long; its ſtrings, which are of no determinate number, are of braſs or ſteel wire, fixed at one end, and ſtretched acroſs the ſound-board by ſcrews fixed at the other. It takes in four octaves, according to the number of the ſtrings, which are ſtruck only with the thumbs, the right hand playing the treble and the left hand the baſs: and in order to draw the ſound the clearer, the thumbs are armed with a little wire pin. This may perhaps be the lyra, or cythara of the ancients; but we find no mention made of it under the name it now bears, which muſt be allowed to be modern.

Harp of Æolus. See Acoustics, n° 10.

HARPAGINES, in antiquity, were hooks of iron, hanging on the top of a pole, which, being ſecured with chains to the maſts of ſhips, and then let down with great velocity into the enemy's veſſels, caught them up into the air. By way of defence againſt theſe machines, they covered their ſhips with hides, which broke and blunted the force of the iron. The harpagines, by the Greeks called Αρπαγες, owe their invention to Anacharſis the Scythian philoſopher.

HARPAGIUS. See Arpagius.

HARPALUS, a Greek aſtronomer, who flouriſhed about 480 B. C. corrected the cycle of eight years invented by Cleoſtratus; and propoſed a new one of nine years, in which he imagined the ſun and moon returned to the ſame point. But Harpalus's cycle was afterwards altered by Metos, who added ten full years to it. See Chronology, n° 27.

HARPIES (ΑΡΠΥΙΑΙ, Harpyiæ), in antiquity, a rapacious impure ſort of monſters of the bird kind, mentioned among the poets. They are repreſented* with wings, ears like bears, bodies like vulturs, faces like women, and feet and hands hooked like the talons of birds of prey.

* Virg. Æn. iii.

The ancients looked on the harpies as a ſort of genii or demons. Some make them the daughters of Tellus and Oceanus, the *earth* and *ocean*; whence, ſays Servius, it is, that they inhabit an iſland, half on land and half in water. Valerius Flaccus makes them the daughters of Typhon.

There were three harpies, Aello, Ocypete, and Celœno, which laſt Homer calls *Podarge*. Heſiod, in his Theogony, ver. 267. only reckons two, Aello and Ocypete, and makes them the daughters of Thamus and Electra, affirming that they had wings and went with the rapidity of the wind. Zephyrus begat of them Balius and Xanthus, Achilles's horſes. Pherecydes relates, that the Boreades expelled them from the Ægean and Sicilian ſeas, and purſued them as far as the iſlands which he calls *Plotæ* and Homer *Calynæ*; and which have ſince been called the *Strophades*.

Voſſius, De Idolo. lib. iii. cap. 99. p. 63. thinks, that what the ancients have related of the harpies, agrees to no other birds ſo well as the bats found in the territories of Darien in South America. Theſe animals kill not only birds, but dogs and cats, and prove very troubleſome to men by their peckings. But the ancients, as the ſame Voſſius obſerves, knew nothing of theſe birds. By the harpies, therefore, he thinks, they could mean nothing elſe but the winds; and that it was on this account they were made daughters of Electra, the daughter of Oceanus. Such is the opinion of the ſcholiaſts of Apollonius, Heſiod, and Euſtathius. Their names, Aello, Ocypete, Celœno, are ſuppoſed to ſuggeſt a farther argument of this.

Mr Bryant ſuppoſes that the harpies were a college of prieſts in Bithynia, who on account of their repeated acts of violence and cruelty, were driven out of the country: their temple was called *Arpi*, and the environs *Arpiai*, whence the Grecians formed Αρπυιαι; and he obſerves farther, that *Harpya*, Αρπυια, was certainly of old the name of a place.

HARPING iron, See Harpoon.

HARPINGS, the fore parts of the wales which encompaſs the bow of a ſhip, and are faſtened to the ſtem, being thicker than the after part of the wales, in order to reinforce the ſhip in this place, where ſhe ſuſtains the greateſt ſhock of reſiſtance in plunging into the ſea, or dividing it, under a great preſſure of ſail.

HARPOCRATES, in mythology, the ſon of Iſis and Oſiris. This is an Egyptain deity, whoſe diſtinguiſhing attribute is, that he is repreſented with his fingers applied to his mouth, denoting that he is the god of ſilence. The ſtatue of this idol was fixed in the entrance of moſt of the Egyptian temples, and he was commonly exhibited under the figure of a young man naked, crowned with an Egyptian mitre, holding in one hand a cornucopia, and in the other a flower of lotus, and ſometimes bearing a quiver.

HARPOCRATION, (Valerius), a celebrated ancient rhetorician of Alexandria, who has left us an excellent *Lexicon upon the ten orators of Greece*. Aldus firſt publiſhed this lexicon in the Greek at Venice in 1603. Many learned men have laboured upon it; but the beſt edition was given by James Gronovius at Leyden in 1696.

HARPOON, or Harping-iron, a ſpear or javelin uſed to ſtrike the whales in the Greenland fiſhery.

The harpoon, which is ſometimes called the *harping-iron*, is furniſhed with a long ſtaff, having at one end a broad and flat triangular head, ſharpened at both edges, ſo as to penetrate the whale with facility; to the head of this weapon is faſtened a long cord, called the *whale line*, which lies carefully *coiled* in the boat, in ſuch a manner as to run out without being interrupted or entangled. See *Whale-Fishery*.

Gun-Harpoon, a kind of fire-arm for diſcharging harpoons at whales, and thereby killing them more eaſily and expeditiouſly than formerly when the harpoons were thrown by the hands. Though this method was projected a good many years ago, it is but lately come into uſe; and premiums have been annually offered by the Society for encouraging arts, &c. to the perſons who firſt ſtruck a fiſh in this manner. In the Tranſactions of that Society for 1786, we have an account of the firſt fiſh ſtruck in this manner in 1784. The gun was of the blunderbuſs conſtruction, loaded with four common tobacco-pipes full of glazed powder; the fiſh was ſhot at the diſtance of ten fathoms, the harpoon going into her back up to the ring; and ſhe was killed in about an hour. In 1785 three whales were killed in this manner; four in 1786 and three in 1787. Since that time the gun-harpoon has come more into uſe, and will probably ſoon ſuperſede the other method entirely. In the Tranſactions of the Society for 1789, we have accounts of a number of whales killed in this manner. The inſtrument appears to be extremely uſeful in calm ſtill weather, as the whale, though a timorous creature, will frequently allow a boat to approach it to the diſtance of 20, 15, or even 10 fathoms, all of which diſtances are within reach of the gun-harpoon, though not within the reach of that thrown by the hand. The greateſt inconvenience was in caſe of rain or ſnow, by which the lock was apt to get wet. To remedy this, a caſe of leather was made to fit over the gun and over the lock, lined with tin and big enough to fire the gun when it was on. The fiſh ſtruck with an harpoon diſcharged in this manner are ſoon killed by reaſon of its penetrating their bodies to a great depth, not leſs than five or ſix feet, which no man's ſtrength would be able to accompliſh. In the volume juſt quoted, we have an account of one which was ſhot through the tail. The harpoon broke in the ſlit, but five fathoms of line went through the tail. The fiſh was killed in eight hours, which is perhaps the only inſtance of a fiſh ſtruck in that part being caught. In another, the harpoon carried ſix feet of line into its body; the creature died in ten minutes. Others were killed in 15 minutes or half an hour, and one had a rib broken by the violence of the ſtroke. In the Tranſactions of the Society for 1790, there are other accounts ſimilar to the foregoing, and all agreeing as to the great uſefulneſs to the inſtrument both for ſtriking the fiſh at a conſiderable diſtance, and for killing them in a very ſhort time.

HARPSICHORD, the moſt harmonious of all the muſical inſtruments of the ſtring-kind. It is played on after the manner of the organ, and is furniſhed with a ſet, and ſometimes with two ſets of keys; the touching or ſtriking of theſe keys moves a kind of little jacks, which alſo move a double row of chords or ſtrings, of braſs or iron, ſtretched over four bridges on the table of the inſtrument.

HARQUEBUSS, a piece of fire-arms, of the length of a muſket, uſually cocked with a wheel. It carried a ball that weighed one ounce ſeven-eighths.

There was alſo a larger ſort, called the great harquebuſs, uſed for the defence of ſtrong places, which carried a ball of about three ounces and a half; but they are now but little uſed, except in ſome old caſtles, and by the French in ſome of their garriſons.

HARRIER, a kind of hound, endowed with an admirable gift of ſmelling, and very bold in the purſuit of his game. See CANIS.

HARRINGTON (Sir John), an ingenious Engliſh poet, was the ſon of John Harrington, Eſq; who was committed to the Tower by queen Mary for holding a correſpondence with her ſiſter Elizabeth; who, when ſhe came to the crown, ſtood godmother to this ſon. Before he was 30, he publiſhed a tranſlation of Arioſto's Orlando Furioſo, a work by which he was principally known; for though he afterwards publiſhed ſome epigrams, his talent did not ſeem to have lain that way. He was created knight of the bath by James I.; and preſented a MS. to prince Henry, levelled chiefly at the married biſhops. He is ſuppoſed to have died about the latter end of James's reign.

HARRINGTON (James), a moſt eminent Engliſh writer in the 17th century, bred at Oxford, travelled into Holland, France, Denmark, and Germany, and learned the languages of thoſe countries. Upon his return to England, he was admitted one of the privy-chamber extraordinary to King Charles. I. He ſerved the king with great fidelity, and made uſe of his intereſt with his friends in parliament to procure matters to be accommodated with all parties. The king loved his company except when the converſation happened to turn upon commonwealths. He found means to ſee the king at St James's; and attended him on the ſcaffold, where, or a little before, he received a token of his majeſty's affection. After the death of king Charles, he wrote his *Oceana:* a kind of political romance, in imitation of Plato's Commonwealth, which he dedicated to Oliver Cromwell. It is ſaid, that when Oliver peruſed it, he declared, that "the gentleman had wrote very well, but muſt not think to cheat him out of his power and authority; for that what he had won by the ſword, he would not ſuffer himſelf to be ſcribbled out of." This work was attacked by ſeveral writers, againſt whom he defended it. Beſide his writings to promote republican principles, he inſtituted likewiſe a nightly meeting of ſeveral ingenious men in the New Palace-Yard, Weſtminſter; which club was called the *Rota,* and continued till the ſecluded members of parliament were reſtored by general Monk. In 1661, he was committed to the Tower for treaſonable deſigns and practices; and chancellor Hyde, at a conference with the lords and commons, charged him with being concerned in a plot. But a committee of the lords and commons could make nothing of that plot. He was conveyed to St Nicolas's iſland, and from thence to Plymouth, where he fell into an uncommon diſorder of the imagination. Having obtained his liberty by means of the earl of Bath, he was carried to London, and died in 1677. He publiſhed, beſides the above works, ſeveral others, which were firſt collected by Toland, in one volume folio, in 1700; but a more complete edition was publiſhed, in 1737, by the reverend Dr Birch.

HARRIOT (Thomas), a celebrated algebraiſt, was born at Oxford in 1560, where he was alſo educated. In 1579, he completed his batchelor's degree; and, being already diſtinguiſhed for his mathematical learning, was ſoon after recommended to Sir Walter

Raleigh, as a proper perſon to inſtruct him in that ſcience. He was accordingly received into the family of that gentleman; who, in 1585, ſent him with the colony, under Sir Richard Grenville, to Virginia; of which country, having remained there about a year, he afterwards publiſhed a topographical deſcription. About the year 1588, Mr Harriot was introduced by his patron Sir Walter Raleigh, to Henry Percy earl of Northumberland, who allowed him a penſion of 120l, per annum. He ſpent many years of his life in Sion college; where he died in July 1621, of a cancer in his lip, and was buried in the church of St Chriſtopher, where a handſome monument was erected to his memory. Anthony Wood tells us, he was a deiſt, and that the divines looked upon his death as a judgment. Be his religious opinions what they might, he was doubtleſs one of the firſt mathematicians of the age in which he lived, and will always be remembered as the inventor of the preſent improved method of algebraical calculation. His improvements in algebra were adopted by Des Cartes, and for a conſiderable time impoſed upon the French nation as his own invention; but the theft was at laſt detected, and expoſed by Dr Wallis, in his Hiſtory of Algebra, where the reader will find our author's invention accurately ſpecified. His works are, 1. A brief and true report of the New-foundland of Virginia; of the commodities there found, and to be raiſed, &c. 2. *Artis analyticæ praxis ad æquationes algebraicas nova expedita, et generali methodo reſolvendas, e poſthumis Thomæ Harrioti*, &c. 3. *Ephemeris chyrometrica*. Manuſcript in the library of Sion college. He is ſaid to have left ſeveral other manuſcripts which are probably loſt.

HARRIS (William), a proteſtant diſſenting miniſter of eminent abilities and character, reſided at Honiton in Devonſhire. Sept. 20. 1765, the degree of D.D. was conferred on him by the univerſity of Glaſgow, by the unanimous conſent of the members of that body. "He publiſhed an Hiſtorical and Critical Account of the Lives of James I. Charles I. and Oliver Cromwell, in five vols 8vo. after the manner of Mr. Bayle. He was preparing a like account of James II. He alſo wrote the life of Hugh Peters; beſides many fugitive pieces occaſionally, for the public prints, in ſupport of liberty and virtue. All his works have been well received; and thoſe who differ from him in principle, ſtill value him in point of induſtry and faithfulneſs." We give this character in the words of his munificent patron Mr Hollis, who had preſented him with many valuable books relative to the ſubjects of his hiſtories; and was at the expence of procuring his degree. But the Doctor's works were differently thought of by the authors of the Critical Review (March 1766). "Induſtry was their principal characteriſtic. They certainly have none of the vivacity which inſpired Bayle, and in the judgment of diſpaſſionate readers, impartiality is frequently violated." Dr Harris died at Honiton, Feb. 4. 1770.

HARRIS (James, Eſq.), an Engliſh gentleman of very uncommon parts and learning, was the ſon of James Harris, Eſq; by a ſiſter of lord Shafteſbury author of the Characteriſtics. He was born in the Cloſe at Saliſbury 1709; and educated at the grammar-ſchool there. In 1726, he was removed to Wadham college in Oxford, but took no degree. He cultivated letters, however, moſt attentively; and alſo muſic, in the theory and practice of which he is ſaid to have had few equals. He was a member for Chriſtchurch Hants, which he repreſented in ſeveral ſucceſſive parliaments. In 1763, he was appointed one of the lords commiſſioners of the admiralty, and ſoon after removed to the board of treaſury. In 1774 he was made ſecretary and comptroller to the queen, which poſt he held until his death. He died Dec. 21, 1780, in his 72d year, after a long illneſs, which he bore with calmneſs and reſignation.—He is the author of ſome valuable works. 1. Three Treatiſes: concerning Art; Muſic, Painting, and Poetry; and Happineſs, 1745, 8vo. 2. Hermes; or, a Philoſophical Enquiry concerning Univerſal Grammar. 3. Philoſophical Arrangements. 4. Philological Inquiries, 1782, 2 vols 8vo. finiſhed juſt before his death, and publiſhed ſince. Theſe Inquiries ſhow much ingenuity and learning; but being the amuſement of his old age rather than an exertion of genius, they have not the philoſophic tone of his former productions.

HARRIS, one of the Hebrides or Weſtern Iſlands of Scotland. It is 20 miles in length, and 10 in breadth. Upon the eaſt ſide it is moſtly rock; but on the weſt there are ſome tolerable farms, and the number of people amounts to 2000. It has Lewis on the North, and North Uiſt on the ſouth, from which it is ſeparated by a channel of four miles in width, called the *Sound of Harris*. This channel is navigable for veſſels of burden, but it requires a ſkilful pilot. It is the only paſſage between the Butt of the Lewis and Bara for veſſels of burden paſſing to and from the weſt ſide of the Long Iſland. The ſound is greatly encumbered with rocks and iſlands, ſome of which are conſiderable, as Bernera, Pabay, Enſay, Killegray. Theſe, with Scalpay, Taranſay, and Scarp, compoſe the inhabited iſlands on the coaſt of Harris. Some of them produce good crops of grain, and all of them good paſture. Harris and its iſlands ſell from 400 to 500 ton of kelp annually; it abounds on the eaſt ſide in excellent lochs or bays, and its ſhores on both ſides form one continued fiſhery. The fiſh on this coaſt, and along the whole ſhores of the Long Iſland, are more numerous, and of a larger dimenſions, than thoſe on the oppoſite continent; on which account, two royal fiſhing ſtations were begun in the reign of Charles I. one in Loch Maddie, and the other in the Sound of Harris.

HARRISON (William), a writer much eſteemed and patroniſed by the literati of his time, was fellow of New-college, Oxford, and had no other income than 40l. a year as tutor to one of the duke of Queenſbery's ſons. In this employment he fortunately attracted the favour of Dr Swift, whoſe ſolicitations with Mr St John obtained for him the reputable employment of ſecretary to lord Raby, ambaſſador at the Hague, and afterwards earl of Strafford. A letter of his whilſt at Utrecht, dated Dec. 16, 1712, is printed in the Dean's works. Mr Harriſon who did not long enjoy his riſing fortune, was diſpatched to London with the Barrier-treaty; and died Feb. 14, 1712-13. See the Journal to Stella, of that and the following day; where Dr Swift laments his loſs with the moſt unaffected ſincerity. Mr Tickle has mentioned him with reſpect in his Proſpect of Peace; in Engliſh Poets, Vol. XXVI. p. 113; and Dr Young in the beautiful cloſe of an Epiſtle to Lord Lanſdowne, Vol. LII. p. 185, moſt pathetically bewails his loſs. Dr Birch, who has given a curious note on Mr Harriſon's Letter to Swift, has confounded him with *Thomas* Harriſon, M. A. of Queen's-college. In Nichols's Select Collection are ſome pleaſing ſpecimens of his poetry; which, with Woodſtock-Park in Dodſley's Collection, and an Ode to the Duke of Marlborough, 1707, in Duncombe's Horace, are all the poetical writings that are known of this excellent young man; who figured both as an humoriſt and politician in the fifth volume of the Tatler, of which (under the patronage of Bolingbroke, Henley, and Swift) he was profeſſedly the editor. See the Supplement to Swift.—There was another *William* Harriſon, author of The Pilgrim, or the happy Convert, a Paſtoral Tragedy, 1709.

HARRISON (John), a moſt accurate mechanic, the celebrated inventor of the famous *time-keeper* for aſcertaining the longitude at ſea, and alſo of the compound, or, as it is commonly called, the *gridiron pendulum*; was born at Foulby, in the pariſh of Wragby, near Pontefract in Yorkſhire, in 1693. The vigour of his natural abilities, if not even ſtrengthened by the want of education, which confined his attention to few objects, at leaſt amply compenſated the deficiences of it; as fully appeared from the aſtoniſhing progreſs he made in that branch of mechanics to which he devoted himſelf. His father was a carpenter, in which profeſſion the ſon aſſiſted; occaſionally alſo, according to the miſcellaneous practice of country artiſts, ſurveying land, and repairing clocks and watches. He was, from his early childhood, attached to any machinery moving by wheels, as appeared while he lay ſick of the ſmall-pox about the ſixth year of his age, when he had a watch placed open upon his pillow to amuſe himſelf by contemplating the movement. In 1700, he removed with his father to Barrow in Lincolnſhire; where, though his opportunities of acquiring knowledge were very few, he eagerly improved every incident from which he might collect information; frequently employing all or great part of his nights in writing or drawing: and he always acknowledged his obligation to a clergyman who came every Sunday to officiate in the neighbourhood, who lent him a MS. copy of profeſſor Saunderſon's Lectures; which he carefully and neatly tranſcribed, with all the diagrams. His native genius exerted itſelf ſuperior to theſe ſolitary diſadvantages; for in the year 1726, he had conſtructed two clocks, moſtly of wood, in which he applied the eſcapement and compound pendulum of his own invention: theſe ſurpaſſed every thing then made, ſcarcely erring a ſecond in a month. In 1728, he came up to London with the drawings of a machine for determining the longitude at ſea, in expectation of being enabled to execute one by the board of longitude. Upon application to Dr Halley, he referred him to Mr George Graham; who, diſcovering he had uncommon merit, adviſed him to make his machine before he applied to the board of longitude. He returned home to perform this taſk; and in 1735 came to London again with his firſt machine; with which he was ſent to Liſbon the next year for a trial of its properties. In this ſhort voyage, he corrected the dead reckoning about a degree and a half; a ſucceſs that proved the means of his receiving both public and private encouragement. About the year 1739, he completed his ſecond machine, of a conſtruction much more ſimple than the former, and which anſwered much better: this, though not ſent to ſea, recommended Mr Harriſon yet ſtronger to the patronage of his private friends and of the public. His third machine, which he produced in 1749, was ſtill leſs complicated than the ſecond, and ſuperior in accuracy, as erring only three or four ſeconds in a week. This he conceived to be the *ne plus ultra* of his attempts; but in an endeavour to improve pocket-watches, he found the principles he applied to ſurpaſs his expectation ſo much, as to encourage him to make his fourth time-keeper, which is in the form of a pocket-watch, about ſix inches diameter. With this time keeper his ſon made two voyages, the one to Jamaica, and the other to Barbadoes: in both which experiments it corrected the longitude within the neareſt limits required by the act of the 12th of queen Anne; and the inventor therefore, at different times, though not without infinite trouble, received the propoſed reward of 20,000l. Theſe four machines were given up to the board of longitude. The three former were not of any uſe, as all the advantages gained by making them were comprehended in the laſt; they were worthy, however, of being carefully preſerved as mechanical curioſities, in which might be traced the gradations of ingenuity executed with the moſt delicate workmanſhip; whereas they now lie totally neglected in the royal obſervatory at Greenwich. The fourth machine, emphatically diſtinguiſhed by the name of *The time-keeper*, has been copied by the ingenious Mr KENDAL; and that duplicate, during a three years circumnavigation of the globe in the ſouthern hemiſphere by captain Cook, anſwered as well as the original. The latter part of Mr Harriſon's life was employed in making a fifth improved time-keeper on the ſame principles with the preceding one; which, at the end of a ten weeks trial, in 1772, at the king's private obſervatory at Richmond, erred only 4½ ſeconds. Within a few years of his death, his conſtitution viſibly declined; and he had frequent fits of the gout, a diſorder that never attacked him before his 77th year: he died at his houſe in Red-Lion Square, in 1776, aged 83. The recluſe manner of his life in the unremitted purſuit of his favourite object, was by no means calculated to qualify him as a man of the world; and the many diſcouragements he encountered in ſoliciting the legal reward of his labours, ſtill leſs diſpoſed him to accommodate himſelf to the humours of mankind. In converſing on his profeſſion, he was clear, diſtinct, and modeſt; yet, like many other mere mechanics, found a difficulty in delivering his meaning by writing: in which he adhered to a peculiar and uncouth phraſeology. This was but too evident in his *Deſcription concerning ſuch mechaniſm as will afford a nice or true menſuration of time*, &c. 8vo. 1775; which his well-known mechanical talents will induce the public to account for from his unacquaintance with letters, from his advanced age, and attendant mental infirmities; among

mong which may be reckoned his obſtinate refuſal to accept of any aſſiſtance whatever in this publication. This ſmall work includes alſo an account of his new muſical ſcale; or mechanical diviſion of the octave, according to the proportion which the radius and diameter of a circle have reſpectively to the circumference. He had in his youth been the leader of a diſtinguiſhed band of church-ſingers; had a very delicate ear for muſic; and his experiments on ſound, with a moſt curious monochord of his own improvement, are reported to have been not leſs accurate than thoſe he was engaged in for the menſuration of time.

HARROGATE, a village in the Weſt Riding of Yorkſhire, in the pariſh of Knareſborough, remarkable for its medicinal ſprings. Theſe are three in number, all different in their qualities, notwithſtanding their contiguity. 1. The Tewet water or Sweet Spa, a vitriolic ſpring of a ſort of milky taſte uſed in gravelly caſes, was diſcovered by Mr Slingſby 1638. 2. The ſtinking or ſulphur ſpring, uſeful in dropſical, ſcorbutic, and gouty caſes, riſes in the town, and is received in four baſons under four different buildings; at one it is drunk, at the others uſed for hot or cold baths. It is perfectly clear; but taſtes and ſmells like a compoſition of rotten eggs, ſea-water, and ſulphur, and extremely ſalt. Bathing is the moſt general mode of uſing it. It is the ſtrongeſt ſulphur water in Great Britain; and from the ſuperior ſtrength of the impregnating ſulphur, it does not loſe the ſulphureous ſmell even when expoſed to a ſcalding and almoſt boiling heat; and in diſtilling it, when three pints had been taken off from a gallon of it, the laſt was as ſtrong as the firſt, and ſtunk intolerably. It is diſcutient and attenuating, and a warm bath of it is of great benefit in pains and aches, ſtrains and lameneſs; diſſolving hard ſwellings, curing old ulcers and ſcrophulous complaints and is a powerful cleanſer of the ſtomach and bowels. 3. St Mungo's well, it is ſo called from Kentigern, a Scots ſaint, much honoured hereabouts, whom his tutor Servanus biſhop of Orkney, out of affection for him, called *Mongah*, which in the Noriſh or Norway language ſignifies a dear friend.—The Harrogate ſeaſon is from May to Michaelmas; and the company aſſemble and lodge in five or ſix large houſes or inns on the heath, a mile from the village, each houſe having a long room and an ordinary: the beſt company uſed to lodge at Knareſborough, which is three miles off.

HARROW-ON-THE-HILL, a town of Middleſex, ſo called from its ſituation on the higheſt hill in the county, is 10 miles northweſt of London. This pariſh is noted for a free ſchool, founded in the reign of queen Elizabeth. A ſilver arrow is ſhot for here once a-year, viz. Auguſt 4. by a ſelect number of the ſcholars, who are dreſſed for the purpoſe in the habit of archers.

HARROW, in agriculture. See there, n° 98.

HART, a ſtag, or male deer, in the ſixth year. See CERVUS.

HART-Beeſt, or Quanga. See CAPRA.

HART's-Horns, the horns of the common male-deer. —The ſcrapings or raſpings of the horn of this animal are medicinal, and uſed in decoctions, ptiſans, &c.

Hartſhorn jelly is nutritive and ſtrengthening, and is ſometimes given in diarrhœas; but a decoction of burnt hartſhorn in water is more frequently uſed for this purpoſe, and is called *hartſhorn drink*.

The coal of hartſhorn, by being calcined with a long continued and ſtrong fire, is changed into a very white earth, called *hartſhorn* calcined to whiteneſs. This earth is employed in medicine as an abſorbent, and adminiſtered in dyſenteries and labour-pains, which are ſuppoſed to be cauſed by acrid and ill-digeſted matters. This earth levigated is the baſis of Sydenham's white decoction, which is commonly preſcribed in theſe diſeaſes.

The ſalt of hartſhorn is a great ſudorific, and given in fevers with ſucceſs; and hartſhorn alſo yields, by diſtillation, a very penetrative volatile ſpirit.

HARTFORD, the capital of the county of the ſame name, ſignifying, as is commonly thought, the "ford of harts," ſtands on the river Lea, 21 miles from London; and is of conſiderable antiquity. Here the Eaſt-Saxon kings often kept their court; and here, in 673, was held a ſynod. King Alfred built a caſtle here, by which the Daniſh veſſels were deſtroyed, that came up from the Thames by its river as far as Ware, where the Danes had erected a fort, from which they made frequent ſallies to plunder and deſtroy the country. The preſent caſtle conſiſts of a gate-houſe, or lodge of brick, and a range of brick buildings, which ſeem of the time of James or Charles I. and alſo of a very ancient wall of ruble-ſtone, with angular towers, ſuppoſed to have been ſtanding ever ſince its firſt foundation. The manor of the town was all along the king's, of whom both the town and caſtle were formerly held *in capite*. The barons took the latter from king John, but Henry III. recovered it. Edward III. gave the town a charter for markets on Thurſdays and Saturdays, and in this grant of it to John of Gaunt, it is called *The Honour of Hartford*. It ſent members to parliament in the reign of Edward I. but after the 7th of Henry V. on the petition of the bailiff and burgeſſes to be exempted by reaſon of their poverty, that privilege was diſcontinued till the 22d of James I. Henry VI. who kept his Eaſter here in 1429, ordained by his charter, confirming their market, that no other ſhould be kept on the ſame days, within ſeven miles, on pain of having the goods ſeized by the bailiffs of Hartford. This manor being then part of queen Margaret's jointure, the courts were held in her name, and ſhe appointed a horſe fair to be kept in what part of the town the bailiff and conſtables thought fit. The ſtandard of weights and meaſures was fixed here in the reign of Henry VII.; and Mary I. made this a corporation by the name of bailiffs and burgeſſes, of whom the latter were 16 by her charter. In the 25th and 35th of Elizabeth, Michaelmas-term was kept here, by reaſon of the plague at both times in London; and that queen, who ſometimes reſided in its caſtle, and declared the borough as parcel of her duchy of Lancaſter, granted it a new charter, by the ſtyle of a bailiff, 11 capital burgeſſes and 16 aſſiſtants, with a market on Saturday. James I. granted it a new charter, with the ſtyle of mayor, burgeſſes, and commonalty, to have 10 capital burgeſſes, and 16 aſſiſtants, the mayor to be choſen out of the former by both of them; and a fair was then appointed here on May 12. Here was once a monaſtery, founded by a nephew of William the Conqueror; and here were formerly five churches which are now reduced to two. In St Andrew's there is a ſeat not only for the mayor and aldermen, but another for the governors of Chriſt-church hoſpital in London, who have erected a houſe in this town on account of its healthy air and dry ſituation, to receive ſuch children as wanted either health or room in that hoſpital; and they have built a gallery in the church, wherein 200 of their children may be accommodated. The town is now governed by a mayor, high-ſteward, who is generally a nobleman, a recorder, 9 aldermen, a town-clerk, chamberlain, 10 capital burgeſſes, and 16 aſſiſtants, and has 2 ſerjeants at mace. The chief commodities of its market are wheat, malt, and wool; and it is ſaid to ſend 5000 quarters of malt to London weekly by the river Lea. Beſides the abovementioned, here are two fairs on July 5 and November 8, and 2 others for cattle, viz. the Saturday fortnight before Eaſter, and its Midſummer fair is chiefly for horſes. Here is a handſome free grammar ſchool, beſides 3 charity-ſchools; but the ſplendor of the place is much diminiſhed ſince the north road from London was turned through Ware. The county goal, however, is ſtill kept in the town, and the gaol-delivery in the caſtle. It gives the title of earl to the noble family of Seymour-Conway.

HARTFORDSHIRE, a county of England, deriving its name from Hartford the capital; and that from the harts with which it anciently abounded, being then over-run with woods. It is bounded on the eaſt by Eſſex, on the weſt by Bedfordſhire, and Buckinghamſhire, on the ſouth by Middleſex, and on the north by Cambridgeſhire. This county is much indented by thoſe that ſurround it: the longeſt part is about 35 miles, and the broadeſt about 27; and the circumference is 190, containing about 451,000 acres. It is divided into eight hundreds, which contain 19 market towns, 54 vicarages, 120 pariſhes, and near 950 villages, with about 16,500 houſes, and 90,000 inhabitants; and ſends ſix members to parliament, two knights for the ſhire, with two burgeſſes for St Albans, and as many for Hartford. Before the reign of queen Elizabeth, one ſheriff ſerved both for this ſhire and Eſſex; but in the ninth year of her reign, it had one allotted for itſelf. With regard to eccleſiaſtical juriſdiction, it belongs partly to the dioceſe of Lincoln, and partly to that of London. Though the ſoil in general, eſpecially in the Chiltern and ſouthern parts, is but very indifferent, and much inferior to that of the neighbouring counties; yet the air is ſo much ſuperior, that lands in this ſhire generally ſell at three or four years purchaſe more than in many others on that account. But it muſt be owned, that the ſoil of Hartfordſhire has been much improved of late, by draining, ſowing graſs-ſeeds, and other methods. There are few or no manufactures in the county; but its markets are much frequented, in conſequence of its being near London, for malt and all ſorts of grain, which, with the many thoroughfares through it, make ample amends.

HARTLAND, a town in Devonſhire, near the Briſtol channel, with a market on Saturdays, much frequented by the people of Cornwall, who come hither in boats. It gives its name to a point, called *Hartland Point*, at the entrance of Briſtol channel. W. Long. 4. 45. N. Lat. 51. 9.

HARTLEPOOL, a ſea-port town in the county of Durham. It is commodiouſly ſeated on a promontory, and is almoſt encompaſſed by the ſea. It is an ancient corporation, governed by a mayor and aldermen, with other ſubordinate officers. It is at preſent a pretty large but poor place. It depends chiefly on the fiſhing trade; and its harbour is much frequented by coliers paſſing to and from Newcaſtle. W. Long. 0. 55. N. 54. 40.

HARTLEY, a town of Northumberland, on the coaſt, ſituated northweſt of Tynemouth, where Lord Delaval has conſtructed a pretty haven, whence coals are ſhipped for London. Here are large ſalt works and copperas works, and likewiſe conſiderable glaſs works; and there is here a canal cut through a ſolid rock to the harbour, 52 feet deep, 30 broad, and 900 long. Theſe works are the ſole property of Lord Delaval, and yield a revenue of above 20,000 l. per ann.

HARTLEY (David), M. A. born at Ilingworth, where his father was a curate, received his academical education at Jeſus college, Cambridge, of which he was a fellow. He firſt began to practiſe phyſic at Newark, in Nottinghamſhire; from whence he removed to St Edmund's Bury, in Suffolk. After this, he ſettled for ſome time in London; and laſtly went to live at Bath, where he died in 1757, aged 53, leaving two ſons and a daughter. He publiſhed "A view of the preſent evidence for and againſt Mrs Stephens's* medicines as a ſolvent for the ſtone, containing 155 caſes, with ſome experiments and obſervations;" London, 1739. He is ſaid to have alſo written againſt Dr Warren, of St. Edmund's Bury, in defence of inoculation; and ſome letters of his are to be met with in the Philoſophical Tranſactions. The doctor was certainly a man of learning, and reputed a good phyſician; but too fond of noſtrums. But his moſt conſiderable literary production is a work intitled, "Obſervations on man, his frame, his duty, and his expectations, in two parts;" London, 1749, 2 vols. 8vo. The firſt part contains obſervations on the frame of the human body and mind, and on their mutual connections and influences. The ſecond part contains obſervations on the duty and expectations of mankind.

HARTMAN (John Adolphus), a learned divine and hiſtorian, was born at Munſter in 1680. After being a Jeſuit for ſeveral years, he became a Calviniſt at Caſſel, in 1715; and ſoon after was made profeſſor of philoſophy and poetry, and in 1722 profeſſor of hiſtory and eloquence, at Marpurg, where he died in 1744. The moſt eſteemed of his works are, 1. The ſtate of the ſciences at Heſſe, in German. 2. *Hiſtoria Haſſiaca*, 3 vols. 3. *Præcepta eloquentiæ rationalis*, &c.

He ought not to be confounded with *George Hartman*, a German mathematician, who, in 1540, wrote a book on perſpective; nor with *Wolfgang Hartman*, who, in 1596, compoſed the Annals of Augſburg.

HARTOGIA, in botany: A genus of the pentandria order, belonging to the monœcia claſs of plants; and in the natural method ranking under the 48th order, *Aggregatæ*. The male calyx is pentaphyllous, the pe-

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* See *Stephens's Medicines*

petals five; the female calyx triphyllous, with five petals, and five barren and five caſtrated ſtamina. There are three capſules; and the ſeeds are arillated, or incloſed in a deciduous caſe.

HARUSPICES, pretenders to divination by certain ſigns or omens among the Romans.—The Roman haruſpices were at firſt all taken from Hetruria, where their art had moſt credit. Afterwards young Romans were ſent into Hetruria, in order to be brought up in the ſcience. It conſiſted in foretelling future events by attending to various circumſtances of the victims. Firſt, It was an ill omen when the victim would not come to the altar without dragging, when it broke its rope, fled away, avoided the ſtroke, ſtruggled much after it, made a great bellowing, was long a-dying, or bled but little. Secondly, Preſages were drawn from inſpecting the noble parts of the victim when opened; as the heart, lungs, ſpleen, and eſpecially the liver. If all theſe were ſound, if the top of the liver was large and well-made, and if its fibres were ſtrong, it preſaged well for the affair in queſtion. Thirdly, Knowledge was alſo drawn by the haruſpices from the manner in which the fire conſumed the victim. If the flame brightened immediately, was pure and clear, roſe up in a pyramid without noiſe, and did not go out till the victim was conſumed, theſe were happy ſigns. Fourthly, The ſmoke alſo was conſidered, whether it whirled about in curls, or ſpread itſelf to the right or the left, or gave a ſmell different from the common one of broiled meat. Fifthly, It was a lucky omen if the incenſe they burned melted all at once, and gave a moſt agreeable ſmell.

HARUSPICY. See HARUSPICE and DIVINATION.

HARVEST, probably derived from a Saxon word ſignifying *herb feaſt*, is that ſeaſon of the year when the corn is ripe and fit to be reaped and gathered into barns.

HARVEST-Fly, in zoology, a large four-winged fly of the cicada kind, very common in Italy, and erroneouſly ſuppoſed to be a graſshopper. See CICADA.

HARVEST-Home, denotes the feaſt often obſerved at the cloſe of harveſt, and alſo the ſong uſed on that occaſion. See DECEMBER.

HARVEY (Dr William), an eminent Engliſh phyſician in the 17th century, was incorporated Doctor of phyſic in Cambridge, afterwards admitted into the college of phyſicians in London, and was appointed lecturer of anatomy and chirurgery in that college. In theſe lectures he opened his diſcovery relating to the circulation of the blood; which, after a variety of experiments, he communicated to the world in his *Exercitatio anatomica de motu cordis et ſanguinis*. He was phyſician to king James I. and to king Charles I. and adhered to the royal cauſe. His works have eternized his memory. In 1651, he publiſhed his *Exercitationes de generatione animalium*, a very curious work; but it would have been more ſo had not his papers been deſtroyed during the civil wars. In 1654, he was choſen preſident of the college of phyſicians in his abſence: but his age and weakneſs were ſo great, that he could not diſcharge the duty of that office; and therefore deſired them to chooſe Dr Pringle. As he had no children he ſettled his paternal eſtate upon the college. He had three years before built a combination-room, a library, and a muſeum; and in 1656, he brought the deeds of his eſtate, and preſented them to the college. He was then preſent at the firſt feaſt, inſtituted by himſelf, to be continued annually, together with a commemoration ſpeech in Latin, to be ſpoken on the 18th of October, in honour of the benefactors to the college; he having appointed a handſome ſtipend to the orator, and alſo for the keeper of the library and muſeum, which are ſtill called by his name. He died in 1657.

This great phyſician had the happineſs, in his lifetime, to find the clamours of ignorance, envy, and prejudice againſt his doctrine, totally ſilenced, and to ſee it univerſally eſtabliſhed. It has, by length of time, been more and more confirmed, and every man now ſees and knows it from his own experience. It appears to be of the utmoſt importance in medicine; as it is perhaps impoſſible to define health and ſickneſs in fewer words, than that the one is a free, and the other an obſtructed, circulation.—Dr Harvey was not only an excellent phyſician, but an excellent man; his modeſty, candour, and piety, were equal to his knowledge; the farther he penetrated into the wonders of nature the more he was inclined to venerate the Author of it.

HARWICH, a town of Eſſex, in England, 72 miles from London. It is not large; but is well built and populous, has a good maritime trade, is almoſt encompaſſed by the ſea, and has ſtrong works. It is walled in; and the ſtreets are paved for the moſt part with clay, which tumbling down from the cliff, where is a petrefying water between the town and Beacon-Hill, ſoon grows as hard as ſtone; and the inhabitants boaſt the wall is as ſtrong and the ſtreets are as clean as thoſe that are of real ſtone. The harbour or bay is very large, ſafe, and deep; and is commanded by a ſtrong fort on the Suffolk ſide, though not in that county. Here is a dock belonging to the government, with all convenience for building, cleaning, and refitting men of war. A little way from the town, on a high hill called *Beacon-hill*, is a very fine light-houſe, which is ſeen at a great diſtance, and is very uſeful on this dangerous coaſt. At this place the packet-boats which paſs between England and Holland are ſtationed, and the town is much benefited by the paſſengers. The bay is ſo ſpacious, by the influx of the Stour from Maningtree, and the Orwell from Ipſwich, and ſuch uſe was made of it in the Dutch war, that 100 ſail of men of war have been ſeen there at one time, with their tenders, beſides 300 or 400 ſail of colliers; for it is a perfect harbour to within two miles of Ipſwich, and able to receive ſhips of 100 guns all the way. The inns here are very good; but the accommodations dear, by reaſon of the great concourſe of paſſengers to and from Holland, which was the motive of fitting up ſloops to go thither directly from the Thames, when the ſtage-coaches that uſed to ply two or three times a week between this place and London were laid down. This place was firſt made a free borough, and had a grant of its market on Tueſdays in the reign of Edward II. Its government was ſettled by charter of king James I. in a mayor, choſen yearly, November 30, out of eight aldermen, who with 24 capital burgeſſes, the electors, and the recorder, make the corporation. By this charter it had alſo a power to elect two burgeſſes to parliament, the grant of its Friday market, and its two fairs on May-day and October 18. which are each for three days. The town has alſo an admiralty juriſdiction within its liberties, and the return of all writs, fines, &c. Though the entrance into the ſea here is between two and three miles wide at high-water, yet the channel where the ſhips muſt keep to come to the harbour, which is on the Suffolk ſide, is deep and narrow; ſo that all ſhips that come in or go out are commanded by the guns of Landguard-Fort on that ſide. This town was fortified heretofore on the land ſide, but in the reign of king Charles I. the fortifications were demoliſhed. It has ſince been ordered to be refortified.—The church here, ever ſince the reformation, has been a chapel to the mother-church at Dover-Court.

HARWOOD, a ſmall but pretty town in the north riding of Yorkſhire, with a coſtly ſtone-bridge of 11 arches over the Wherfe, which runs in a bed of ſtone, and is as clear as rock-water. Near it are the ruins of an ancient caſtle, built ſoon after the conqueſt; which remained a neat ſtrong building in Cambden's time. It had a variety of maſters; one of whom, in the reign of king John, obtained a grant for a market and fair here. In the reign of Edward III. it was valued at 400 marks a-year. This caſtle was ruined in the civil wars. It has eight or nine dependent conſtabularies, wherein are many antiquities. The remains of the caſtle which ſeems to have been the keep, is in a condition to exiſt long. The caſtle itſelf covered near an acre of ground. Near it is now Harwood-Houſe, one of the firſt houſes in the county for elegance and ſuperior embelliſhments; built on part of the ſite of Gawthorp-Hall, now no more. In the church are ſome ancient monuments, particularly that of lord chief-juſtice Gaſcoigne, who committed the prince of Wales to priſon for ſtriking him on the bench.

HASLEMERE, a town of Surry, in England, ſeated on the edge of the county near Hampſhire, 43 miles from London, is an ancient place, and was once deſtroyed by the Danes. It is a borough by preſcription, and has ſent members to parliament ever ſince the reign of Edward IV. who are choſen by a bailiff and burgage-teeners. It is ſaid to have had ſeven pariſh-churches formerly, though but one church now, which is a chapel of eaſe to Chidingfold: and that it ſtood heretofore upon a hill more to the ſouth than the preſent town.

HASSELQUISTA, in botany: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 45th order, *Umbellatæ*. The fruits are quite ſmooth; the ſeeds of the radius oval, plane, marginated, and convex in the middle; thoſe in the diſk hemiſpherical and urceolated or bladder-ſhaped.

HASSELT, a handſome town of the United Provinces, in Overyſſel, ſeated on the river Wecht, in E. Long. 6. 5. N. Lat. 53. 46.

Hasselt, a town of Germany, in the circle of Weſtphalia, and in the territory of Liege, ſituated on the river Demer, in E. Long. 4. 49. N. Lat. 50. 55.

HASSIDEANS, or Assideans. See Assideans.

HASSOCK, a baſs made of ruſhes, to kneel or reſt the feet upon in churches.

HASP *and* Staple, in Scots law, the ſymbol commonly uſed in burgage tenements for entering and infeſting an heir, by delivering into his hands the haſp and ſtaple of the door.

HASTA, or *Hasta Pura*, among medaliſts, ſignifies a kind of ſpear or javelin, not ſhod or headed with iron; or rather an ancient ſceptre, ſomewhat longer than ordinary, occaſionally given to all the gods.

The haſta is ſuppoſed a ſymbol of the goodneſs of the gods, and of the conduct of providence, which is equally mild and forcible.

Hasta, in ſome countries, is a meaſure or quantity of ground amounting to thirty paces: thus called, according to M. Du Cange, from the haſta or rod wherewith it was meaſured.

HASTATED Leaf. See Botany, p. 442.

HASTING-pear, a name given by the gardeners to a ſpecies of pear, called alſo by ſome the *green chiſſel pear*. This is a moderately large pear, and is longiſh towards the pedicle; its ſkin is thin, and of a whitiſh green; the pulp is melting, and of a ſugary flavour. It ripens in July.

HASTINGS, a town of Suſſex in England, 64 miles from London. It is the chief of the cinque-ports; and was formerly obliged to find 21 ſhips, within 40 days after the king's ſummons, well furniſhed and armed for ſervice, and to maintain the crews a fortnight at its own charge. This town is ſuppoſed to have taken its name from Haſtings, the famous Daniſh pirate, who uſed to build fortreſſes where he went aſhore for his prey, to cover his men, and ſecure his retreat. In king Athelſtan's reign here was a mint. This town had charters from Edward the Confeſſor, William I. and II. Henry II. Richard I. Henry III. Edward I. and Charles II. exempting it from toll, and impowering it to hold courts of judicature on life and death. It is incorporated by the ſtyle of mayor, jurats, and commonalty. It has handſome houſes, and cuſtom-houſe offices; but frequent ſtorms have rendered it an indifferent harbour, though a vaſt ſum of money has been laid out at times to make it a good one. It has ſent members to parliament ever ſince Edward III. London is ſupplied from hence with abundance of fiſh that are taken on the coaſt. The town lies between two high cliffs towards the ſea, and as high a hill on the land ſide, having two ſtreets, and in each a pariſh-church, divided by a ſtream of freſh water called the Bourne. About the year 1377, this town was burnt by the French: and after it was rebuilt, it was divided into the two pariſhes. Here are two charity ſchools, erected for the teaching of 200 or 300 children. There was a caſtle on the hill, which overlooked the town, but it is now in ruins. The markets here are on Wedneſdays and Saturdays: the fairs are on Tueſday and Wedneſday in Whitſun-week, and July 26, October 23, and 24. Here was formerly a priory. Haſtings was a barony in the Huntington family, now in the Rawdon family.

This town is remarkable for a battle fought in its neighbourhood, between Harold king of England and William duke of Normandy, on the 15th of October 1066, in which the former was defeated and killed; and by his death William, ſurnamed the *Conqueror*, became king of England: (See England, n°86.)—The night before the battle, the aſpect of things was very different in the two camps. The Engliſh ſpent the time in riot, jollity, and diſorder; the Normans in prayer and other duties of religion. The next day both armies prepared for battle. The duke divided his army into three lines: the firſt, headed by Montgomery, conſiſted of archers and light-armed infantry: the ſecond, commanded by Martel, was compoſed of his braveſt battalions, heavy-armed, and ranged in cloſe order; his cavalry at whoſe head he placed himſelf, formed the third line; and were ſo diſpoſed, that they ſtretched beyond the infantry, and flanked each wing of the army. He ordered the ſignal of battle to ſound; and the whole army, moving at once, and ſinging the hymn or ſong of Roland the famous peer of Charlemagne, advanced, in order and with alacrity, towards the enemy.

Harold had ſeized the advantage of a riſing ground, and having beſides drawn ſome trenches to ſecure his flanks, he reſolved to ſtand upon the defenſive, and to avoid all action with the cavalry, in which he was inferior. The Kentiſh men were placed in the van, a poſt which they had always claimed as their due; the Londoners guarded the ſtandard; and the king himſelf, accompanied by his two valiant brothers, Gurth and Leofwin, diſmounting from horſeback, placed himſelf at the head of his infantry, and expreſſed his reſolution to conquer or to periſh in the action. The firſt attack of the Normans was deſperate, but was received with equal valour by the Engliſh: and after a furious combat, which remained long undecided, the former, overcome by the difficulty of the ground, and hard preſſed by the enemy, began firſt to relax their vigour: then to give ground; and confuſion was ſpreading among the ranks, when William, who found himſelf on the brink of deſtruction, haſtened, with a ſelect band, to the relief of his diſmayed forces. His preſence reſtored the action: the Engliſh were obliged to retreat with loſs; and the duke, ordering his ſecond line to advance, renewed the attack with freſh forces and with redoubled courage. Finding that the enemy, aided by the advantage of ground, and animated by the example of their prince, ſtill made a vigorous reſiſtance, he tried a ſtratagem, which was very delicate in its management, but which ſeemed adviſeable in his deſperate ſituation, when, if he gained not a deciſive victory, he was totally undone: he commanded his troops to make a haſty retreat, and to allure the enemy from their ground by the appearance of flight. The artifice ſucceeded againſt theſe unexperienced troops; who, heated by the action, and ſanguine in their hopes, precipitately followed the Normans into the plain. William gave orders, that at once the infantry ſhould face about upon their purſuers, and the cavalry make an aſſault upon their wings, and both of them purſue the advantage which the ſurprize and terror of the enemy muſt give them in that critical and deciſive moment. The Engliſh were repulſed with great ſlaughter, and driven back to the hill; where being rallied again by the bravery of Harold, they were able, notwithſtanding their loſs, to maintain the poſt and continue the combat. The duke tried the ſame ſtratagem a ſecond time with the ſame ſucceſs; but even after this double advantage, he ſtill found a great body of the Engliſh, who, maintaining themſelves in firm array, ſeemed determined to diſpute the victory to the laſt extremity. He ordered his heavy-armed infantry to make the aſſault upon them; while his archers, placed behind, ſhould gall the enemy, who were expoſed by the ſituation of the ground, and who were intent in defending themſelves againſt the ſwords and ſpears of the aſſailants. By this diſpoſition he at laſt prevailed. Harold was ſlain by an arrow, while he was combating with great bravery at the head of his men. His two brothers ſhared the ſame fate; and the Engliſh, diſcouraged by the fall of theſe princes, gave ground on all ſides, and were purſued with great ſlaughter by the victorious Normans. A few troops, however, of the vanquiſhed dared ſtill to turn upon their purſuers; and taking them in deep and miry ground, obtained ſome revenge for the ſlaughter and diſhonour of the day. But the appearance of the duke obliged them to ſeek their ſafety by flight, and darkneſs ſaved them from any farther purſuit by the enemy.

Thus was gained by William duke of Normandy, the great and deciſive victory of Haſtings, after a battle which was fought from morning till ſunſet, and which ſeemed worthy, by the heroic feats of valour diſplayed by both armies, and by both commanders, to decide the fate of a mighty kingdom. William had three horſes killed under him; and there fell near fifteen thouſand men on the ſide of the Normans. The loſs was ſtill more conſiderable on that of the vanquiſhed; beſides the death of the king and his two brothers. The dead body of Harold was brought to William, who reſtored it without ranſom to his mother.

HASTIVE, a French term, ſometimes uſed in Engliſh for early, forward, or ſomething that comes before the ordinary time or ſeaſon. The haſtive fruits are ſtrawberries and cherries. We have haſtive peas, &c.

HAT, a covering for the head, worn by the men throughout the weſtern part of Europe. Hats are ſaid to have been firſt ſeen about the year 1400, at which time they became of uſe for country wear, riding, &c. F. Daniel relates, that when Charles II. made his public entry into Rouen, in 1449, he had on a hat lined with red velvet, and ſurmounted with a plume or tuft of feathers: he adds, that it is from this entry, or at leaſt under this reign, that the uſe of hats and caps is to be dated, which henceforward began to take place of the chaperoons and hoods that had been worn before. In the proceſs of time, from the laity, the clergy alſo took this part of the habit; but it was looked on as a great abuſe, and ſeveral regulations were publiſhed, forbidding any prieſt or religious perſon to appear abroad in a hat without coronets, and enjoining them to keep to the uſe of chaperoons, made of black cloth, with decent coronets: if they were poor, they were at leaſt to have coronets faſtened to their hats, and this upon penalty of ſuſpenſion and excommunication. Indeed the uſe of hats is ſaid to have been of a longer ſtanding among the eccleſiaſtics of Britanny, by two hundred years, and eſpecially among the canons; but theſe were no other than a kind of caps, and from hence aroſe the ſquare caps worn in colleges, &c. Lobineau obſerves, that a biſhop of Dol, in the 12th century, zealous for good order, allowed the canons alone to wear ſuch hats: enjoining, that if any other perſon came with them to church, divine ſervice ſhould immediately be ſuſpended.

Hats.

Hats make a very conſiderable article in commerce; the fineſt, and thoſe moſt valued, are made of pure hair of an amphibious animal, called the caſtor or beaver, frequent in Canada and other parts of North America. See Beaver.

Method of making Hats. Hats are made either of wool, or hair of diverſe animals, particularly of the caſtor, hare, rabbet, camel, &c. The proceſs is much the ſame in all; for which reaſon we ſhall content ourſelves to inſtance in that of caſtors.

The ſkin of this animal is covered with two kinds of hair; the one long, ſtiff, gloſſy, and pretty thin ſet; this is what renders the ſkin or fur of ſo much value: the other is ſhort, thick, and ſoft, which alone is uſed in hats.

To tear off one of theſe kinds of hair, and cut the other, the hatters, or rather the women employed for that purpoſe, make uſe of two knives, a large one like a ſhoemaker's knife for the long hair; and a ſmaller, not unlike a vine knife, wherewith they ſhave or ſcrape off the ſhorter hair.

When the hair is off, they mix the ſtuff; to one third of dry caſtor putting two-thirds of old coat, i. e. of hair which has been worn ſome time by the ſavages, and card the whole with cards, like thoſe uſed in the woollen manufactory, only finer; this done, they weigh it, and take more or leſs according to the ſize or thickneſs of the hat intended. The ſtuff is now laid on the hurdle, which is a ſquare table, parallel to the horizon, having longitudinal chinks cut through it; on this hurdle, with an inſtrument called a *bow*, much like that of a violin, but larger, whoſe ſtring is worked with a little bow ſtick, and thus made to play on the furs, they fly and mix together, the duſt and filth at the ſame time paſſing through the chinks; this they reckon one of the moſt difficult operations in the whole, on account of the juſtneſs required in the hand to make the ſtuff fall preciſely together, and that it may be every where of the ſame thickneſs. In lieu of a bow, ſome hatters make uſe of a ſieve or ſearce of hair, through which they paſs the ſtuff.

After this manner they form gores, or two capades, of an oval form, ending in an acute angle at top; and with what ſtuff remains, they ſupply and ſtrengthen them in places where they happen to be ſlenderer than ordinary; though it is to be remembered, that they deſignedly make them thicker in the brim, near the crown, than toward the circumference, or in the crown itſelf.

The capades thus finiſhed, they go on to harden them into cloſer and more conſiſtent flakes by preſſing down a hardening ſkin or leather thereon; this done, they are carried to the baſon, which is a ſort of bench with an iron plate fitted therein, and a little fire underneath it; upon which laying one of the hardened capades, ſprinkled over with water, and a ſort of mould being applied thereon, the heat of the fire, with the water and preſſing, imbody the matter into a ſlight hairy ſort of ſtuff or felt; after which, turning up the edges all round the mould, they lay it by, and thus proceed to the other: this finiſhed, the two next are joined together, ſo as to meet in an angle at the top, and only form one conical cap, after the manner of a manica Hippocratis, or flannel bag.

Hats.

The hat thus baſoned, they remove it to a large kind of receiver or trough, reſembling a mill-hopper, going ſloping or narrowing down from the edge or rim to the bottom, which is a copper kettle filled with water and grounds, kept hot for that purpoſe. On the deſcent or ſloping ſide, called the *plank*, the baſoned hat, being firſt dipped in the kettle, is laid; and here they proceed to work it, by rolling and unrolling it again and again, one part after another, firſt with the hand, and then with a little wooden roller, taking care to dip it from time to time, till at length by thus fulling and thickening it four or five hours, it is reduced to the extent or dimenſions of the hat intended. To ſecure the hands from being injured by this frequent rolling, &c. they uſually guard them with a ſort of thick gloves.

The hat thus wrought, they proceed to give it the proper form, which is done by laying the conical cap on a wooden block, of the intended ſize of the crown of the hat, and thus tying it round with a packthread, called a *commander*: after which, with a piece of iron, or copper bent for that purpoſe, and called a *ſtamper*, they gradually beat or drive down the commander all round, till it has reached the bottom of the block, and thus is the crown formed; what remains at bottom below the ſtring being the brim.

The hat being now ſet to dry, they proceed to ſinge it, by holding it over a flare of ſtraw or the like; then it is pounced, or rubbed over with pumice, to take off the coarſer knap; then rubbed over afreſh with ſeal-ſkin to lay the knap a little finer; and laſtly, carded with a fine card to raiſe the fine cotton, with which the hat is afterwards to appear.

Things thus far advanced, the hat is thus ſet, upon its block, and tied about with a packthread as before, to be dyed. The dye being completed, the hat is returned to the hatter, who proceeds to dry it, by hanging it in the top or roof of a ſtove or oven, at the bottom of which is a charcoal fire; when dry, it is to be ſtiffened, which is done with melted glue or gum ſenegal, applied thereon by firſt ſmearing it, and beating it over with a bruſh, and then rubbing it with the hand. The next thing is to ſteam it on the ſteaming baſon, which is a little hearth or fire-place; raiſed three feet high with an iron-plate laid over it, exactly covering the hearth; on this plate they firſt ſpread cloths, which being ſprinkled over with water to ſecure the hat from burning, the hat is placed brim downwards thereon; when moderately hot, the workman ſtrikes gently on the brim with the flat of his hand, to make the joinings incorporate and bind ſo as not to appear; turning it from time to time, this way and that way, and at laſt overturning and ſetting it in the crown. When ſteamed ſufficiently, and dried, they put it again on the block, and bruſh and iron it on a table or bench for the purpoſe, called the *ſtall-board*; this they perform with a ſort of irons like thoſe commonly uſed in ironing linen, and heated like them; which being rubbed over and over each part of the hat, with the aſſiſtance of the bruſh, ſmoothes and gives it a gloſs, which is the laſt operation; nothing now remaining but to clip the edges even with ſciſſars, and ſew a lining to the crown.

Dyeing of Hats. The inſtructions of Mr Colbert direct hats to be firſt ſtrongly galled, by boiling them a long time in a decoction of galls with a little logwood, that the dye may penetrate the better into their ſubſtance; after which a proper quantity of vitriol, and decoction of logwood, with a little verdigris, are added, and the hats continued in this mixture alſo for a conſiderable time. They are afterwards to be put into a freſh liquor of logwood, galls, vitriol, and verdigris; and where the hats are of great price, or of a hair which difficultly takes the dye, the ſame proceſs is to be repeated a third time. For obtaining the moſt perfect colour, the hair or wool is to be dyed blue previouſly to its being formed into hats.—The preſent practice is more compendious, and affords, as we may daily ſee, a very good black. According to Dr. Lewis, it does not materially differ from that of the *Encyclopédie*, which is as follows.

An hundred pounds of logwood, 12 pounds of gum, and ſix pounds of galls, are boiled in a proper quantity of water for ſome hours; after which, about ſix pounds of verdigris and ten of green vitriol are added, and the liquor kept juſt ſimmering, or of a heat a little below boiling. Ten or twelve dozen of hats are immediately put in, each on its block, and kept down by croſs bars for about an hour and an half: they are then taken out and aired, and the ſame number of others put in their room. The two ſets of hats are thus dipped and aired alternately, eight times each; the liquor being refreſhed each time with more of the ingredients, but in leſs quantity than at firſt.

The proceſs (ſays Dr Lewis) affords a very good black on woollen and ſilk ſtuffs as well as on hats, as we may ſee in the ſmall pieces of both kinds which are ſometimes dyed by the hatters. The workmen lay great ſtreſs upon the verdigris, and affirm that they cannot dye a black hat without it: it were to be wiſhed that the uſe of this ingredient were more common in the other branches of the black dye; for the hatters dye, both on ſilk and woollen, is reckoned a finer black than what is commonly produced by the woollen and ſilk dyer.

Hats are alſo made for womens wear, not only of the above ſtuffs, but of chips, ſtraw, or cane, by plaiting, and ſewing the plaits together; beginning with the centre of the crown, and working round till the whole is finiſhed. Hats for the ſame purpoſe are alſo wove and made of horſe-hair, ſilk, &c.

Hat is alſo figuratively uſed for the dignity of a cardinal, or a promotion to that dignity. In this ſenſe they ſay, "to expect the hat; to claim, or have pretenſions to, the hat," &c.

Pope Innocent IV. firſt made the hat the ſymbol or cognizance of the cardinals, enjoining them to wear a red hat at the ceremonies and proceſſions, in token of their being ready to ſpill their blood for Jeſus Chriſt.

HATCH, or Hatchway, a ſquare or oblong opening in the Deck of a ſhip, of which there are ſeveral, forming the paſſages from one deck to another, and into the hold or lower apartments. See Plate CLVI. where A repreſents the main-hatchway of the lower deck; N N the fore-hatchway; and OO the after-hatchway.—There are likewiſe hatches of a ſmaller kind, called *ſcuttles*. See UU in the ſame figure; as as alſo the article Scuttle.—Hatches is alſo, though improperly, a name applied by ſailors to the covers or lids of the hatchway.

HATCHEL, or Hitchel, in the manufactory of flax, hemp, &c. a tool, not unlike a card, for dreſſing and combing them into fine hairs.

They conſiſt of ſharp-pointed iron pins, or teeth, ſet orderly in a board.

Of theſe there are ſeveral ſorts, ſome with finer and ſhorter teeth, others with them coarſer and longer.

HATCHES, in mining, a term uſed in Cornwall, to expreſs any of the openings of the earth either into mines or in ſearch of them. The fruitleſs openings are called *eſſay-hatches*; the real mouths of the veins, *tin-hatches*; and the places where they wind up the buckets of ore, *wind-hatches*.

Hatches alſo denote flood gates ſet in a river, &c. to ſtop the current of the water, particularly certain dams or mounds made of rubbiſh, clay, or earth, to prevent the water that iſſues from the ſteam-works and tin-waſhes in Cornwall from running into the freſh rivers.

HATCHET, a ſmall light ſort of an axe, with a baſil-edge on its left ſide, and a ſhort handle, as being to be uſed with one hand.—Hatchets are uſed by various artificers, and more particularly in hewing of wood.

HATCHING, the maturating of fecundated eggs, whether by the incubation and warmth of the parent bird, or by artificial heat, ſo as to produce young chickens alive.

The art of hatching chickens by means of ovens has long been practiſed in Egypt; but it is there only known to the inhabitants of a ſingle village named *Berme*, and to thoſe that live at a ſmall diſtance from it. Towards the beginning of autumn they ſcatter themſelves all over the country; where each perſon among them is ready to undertake the management of an oven, each of which is of a different ſize; but, in general, they are capable of containing from forty to fourſcore thouſand eggs. The number of theſe ovens placed up and down the country is about 386, and they uſually keep them working for about ſix months: as, therefore, each brood takes up in an oven, as under a hen, only 21 days, it is eaſy in every one of them to hatch eight different broods of chickens. Every Bermean is under the obligation of delivering to the perſon who intruſts him with an oven, only two-thirds of as many chickens as there have been eggs put under his care; and he is a gainer by this bargain, as more than two-thirds of the eggs uſually produce chickens. In order to make a calculation of the number of chickens yearly ſo hatched in Egypt, it has been ſuppoſed that only two-thirds of the eggs are hatched, and that each brood conſiſts of at leaſt 30,000 chickens; and thus it would appear, that the ovens of Egypt give life yearly to at leaſt 92,640,000 of theſe animals.

This uſeful and advantageous method of hatching eggs has been lately diſcovered in France by the ingenious Mr Reaumur; who, by a number of experiments, has reduced the art to certain principles. He found by experience, that the heat neceſſary for this purpoſe is nearly the ſame with that marked 32 on his thermometer, or that marked 96 on Fahrenheit's. This degree of heat is nearly that of the ſkin of the hen, and, what is remarkable, of the ſkin, of all other domeſtic fowls, and probably of all other kinds of birds. The degree of heat which brings about the developement of the cygnet, the goſling, and the turkey-pout, is the ſame as that which fits for hatching the canary ſongſter, and, in all probability, the ſmalleſt humming-bird: the difference is only in the time during which this heat ought to be communicated to the eggs of different birds; it will bring the canary bird to perfection in 11 or 12 days, while the turkey-pout will require 27 or 28.

After many experiments, Mr Reaumur found that ſtoves heated by means of a baker's oven, ſucceeded better than thoſe made hot by layers of dung: and the furnaces of glaſs-houſes and thoſe of the melters of metals, by means of pipes to convey heat into a room, might no doubt, be made to anſwer the ſame purpoſe. As to the form of the ſtoves, no great nicety is required. A chamber over an oven will do very well. Nothing more will be neceſſary but to aſcertain the degree of heat; which may be done by melting a lump of butter of the ſize of a walnut, with half as much tallow, and putting it into a phial. This will ſerve to indicate the heat with ſufficient exactneſs: for when it is too great, this mixture will become as liquid as oil; and when the heat is too ſmall, it will remain fixed in a lump: but it will flow like a thick ſyrup, upon inclining the bottle, if the ſtove be of a right temper. Great attention therefore ſhould be given to keep the heat always at this degree, by letting in freſh air if it be too great, or ſhutting the ſtove more cloſe if it be too ſmall: and that all the eggs in the ſtove may equally ſhare the irregularites of the heat, it will be neceſſary to ſhift them from the ſides to the centre; and thus to imitate the hens, who are frequently ſeen to make uſe of their bills, to puſh to the outer parts thoſe eggs that were neareſt to the middle of their neſts, and to bring into the middle ſuch as lay neareſt the ſides.

Mr Reaumur has invented a ſort of low boxes, without bottoms, and lined with furs. Theſe, which he calls *artificial parents*, not only ſhelter the chickens from the injuries of the air, but afford a kindly warmth, ſo that they preſently take the benefit of their ſhelter as readily as they would have done under the wings of a hen. After hatching, it will be neceſſary to keep the chickens, for ſome time, in a room artfully heated and furniſhed with theſe boxes: but afterwards they may be ſafely expoſed to the air in the court-yard, in which it may not be amiſs to place one of theſe artificial parents to ſhelter them if there ſhould be occaſion for it.

As to the manner of feeding the young brood, they are generally a whole day after being hatched, before they take any food at all; and then a few crumbs of bread may be given them for a day or two, after which they will begin to pick up inſects and graſs for themſelves.

But to ſave the trouble of attending them, capons may be taught to watch them in the ſame manner as hens do. Mr Reaumur aſſures, that he has ſeen above 200 chickens at once, all led about and defended only by three or four ſuch capons. Nay, cocks may be taught to perform the ſame office; which they, as well as the capons, will continue to do all their lives after.

HATCHING, or HACHING, in deſigning, &c. the making of lines with a pen, pencil, graver, or the like; and the interſecting or going acroſs thoſe lines with others drawn a contrary way, is called *counter-hatching*. The depths and ſhadows of draughts are uſually formed by hatching.

Hatching is of ſingular uſe in heraldry, to diſtinguiſh the ſeveral colours of a ſhield, without being illumined: thus gules or red is hatched by lines drawn from the top to the bottom; azure, by lines drawn acroſs the ſhield; and ſo of other colours.

HATCHMENT, in heraldry, the coat-of-arms of a perſon dead, uſually placed in the front of a houſe, whereby may be known what rank the deceaſed perſon was of when living: the whole diſtinguiſhed in ſuch a manner as to enable the beholder to know whether he was a batchelor, married man, or widower; with the like diſtinctions for women.

Biſhop's-HATFIELD, a town of Hartfordſhire in the great coach-road to the north, 19 miles from London. It was called Biſhop's-Hatfield, becauſe it did belong to the biſhops of Ely. Theodore Archbiſhop of Canterbury held a ſynod here, anno 681, againſt the Eutychean hereſy. Here was once a royal palace, from whence both Edward VI. and Queen Elizabeth were conducted to the throne. King James I. exchanged the manor with Sir Robert Cecil, afterwards earl of Saliſbury, for Theobald's, in the pariſh of Cheſhunt in this county; and the lordſhip ſtill remains in that noble family, who have a very fine ſeat here. The rectory, which is in that earl's gift, is reckoned worth 800 pounds a-year. Here are two charity ſchools; and there is a market on Thurſdays, with two fairs in April and October.

HATFIELD *and* CHACE, a town in the weſt riding of Yorkſhire, four miles from Doncaſter. The chace is famous for deer-hunting. There are many intrenchments near the town, as if it had been the camp of ſome great army. It is ſaid that no rats were ever ſeen in this town.

HATFIELD-BROAD-OAK, or *King's Hatfield*, a town of Eſſex in England, ſeated on a branch of the river Lea, 30 miles from London, is ſo called from the nature of the ſoil, from its tenure by king William the Conqueror and his ſucceſſors, and from a broad oak growing in the town. It has a market on Saturdays, and a fair in Auguſt.

HATTEM, a town of the United Provinces, in the duchy of Guelderland, ſeated on the river Uſſol, in E. Long. 6. 0. N. Lat. 53. 30.

HATTEMISTS, in eccleſiaſtical hiſtory, the name of a modern Dutch ſect, ſo called from Pontian Van Hattem, a miniſter in the province of Zealand, towards the cloſe of the laſt century, who being addicted to the ſentiments of Spinoza, was on that account degraded from his paſtoral office. The Verſchoriſts and Hattemiſts reſemble each other in their religious ſyſtems, though they never ſo entirely agreed as to form one communion. The founders of theſe ſects deduced from the doctrine of abſolute decrees a ſyſtem of fatal and uncontrollable neceſſity; they denied the difference between moral good and evil, and the corruption of human nature: from hence they farther concluded, that mankind were under no ſort of obligation to correct their manners, to improve their minds, or to obey the divine laws; that the whole of religion conſiſted not in acting, but in ſuffering; and that all the precepts of Jeſus Chriſt are reducible to this one, that we bear with cheerfulneſs and patience the events that happen to us through the divine will, and make it our conſtant and only ſtudy to maintain a permanent tranquillity of mind. Thus far they agreed, but the Hattemiſts farther affirmed, that Chriſt made no expiation for the ſins of men by his death, but had only ſuggeſted to us by his mediation, that there was nothing in us that could offend the Deity; this, they ſay, was Chriſt's manner of juſtifying his ſervants, and preſenting them blameleſs before the tribunal of God. It was one of their diſtinguiſhed tenets, that God does not puniſh men for their ſins, but by their ſins. Theſe two ſects, ſays Moſheim, ſtill ſubſiſt, though they no longer bear the names of their founders.

HATTOCK, a ſhock of corn containing twelve ſheaves; others make it only three ſheaves laid together.

HATUAN, a town and fort of Upper Hungary, in the county of Novigrod. It was taken by the Imperialiſts in 1685. It is ſeated on a mountain, in E. Long. 19. 48. N. Lat. 47. 52.

HAVANNA, a ſea-port town of America, in the iſland of Cuba, and on the north-weſt part of it, oppoſite to Florida. It is famous for its harbour, which is in every reſpect one of the beſt in the Weſt Indies, and perhaps in the world. It is entered by a narrow paſſage, upwards of half a mile in length, which afterwards expands into a large baſon, forming three Cul de Sacs, and is ſufficient, in extent and depth, to contain 1000 ſail of the largeſt ſhips, having almoſt throughout ſix fathom water, and being perfectly covered from every wind. The town was built by Diego de Velaſquez, who conquered the iſland of Cuba. It was but a ſmall place, and named originally the port of Carenas, but afterwards, when the city by its increaſe of wealth grew conſiderable, it was called *St Chriſtopher of the Havanna*. In 1536, it was of ſo inconſiderable a value, that being taken by a French pirate, he ranſomed the place for the paltry ſum of 700 pieces of eight. Some time after it was taken by the Engliſh, and a ſecond time by the French; nor was its value underſtood, or any care taken to put it in a poſture of defence, till the reign of Philip II.; though what was then done proved inſufficient. But ſince the acceſſion of a branch of the Houſe of Bourbon to the Spaniſh crown, more pains have been taken to render it a place of ſtrength.

The Havanna ſtands on the weſt ſide of the harbour, in a pleaſant plain; and is the reſidence of the governor and captain-general of Cuba, and of the royal officers, as well as of an aſſeſſor for the aſſiſtance of the governor and captain general of the Weſt Indies. The biſhop of St Jago de Cuba likewiſe chooſes to fix his reſidence here. The buildings are elegant, built of ſtone, and ſome of them moſt ſuperbly furniſhed. Here are eleven churches and monaſteries, and two handſome hoſpitals. Near the middle of the town is a ſpacious ſquare, ſurrounded with uniform buildings. The churches are rich and magnificent; the lamps, candleſticks, and ornaments for the altars being of gold and ſilver; ſome of the lamps are of the moſt curious workmanſhip, and weigh near 100 weight. The Recollects church, which ſtands on the beſt ground in the city, has 12 beautiful chapels in it, and in the monaſtery are cells for 50 fathers. The church of St Clara has ſeven altars adorned with plate, and the nunnery contains 100 women and ſervants, all clothed in blue. The church belonging to the Auguſtines has 13 altars; that of St Juan de Dios 9, with an hoſpital for ſoldiers of 12,000 pieces of eight revenue. It is not a biſhop's ſee, though the biſhop of St Jago reſides here, the revenue of which prelate is not leſs than 50,000 pieces of eight a-year. In 1700 the inhabitants were computed at 26,000, and we may very well imagine them to be increaſed ſince. They are a more polite and ſocial people than the inhabitants of any of the Spaniſh ports on the continent; and of late imitate the French both in their dreſs and manners. The city is ſupplied with water by a ſmall river called *Lagida*, which riſes from the hills on the ſouth weſt ſide of the town, and divides itſelf into three ſtreams, one of which falls into the ſea on the eaſt ſide of the town, but the other two flow through the place, entering the walls near the middle of the city.

As to the fortifications, it was already remarked, that the entrance to the harbour is by a narrow gut near half a mile in length: this paſſage is defended on the eaſt ſide by a ſtrong caſtle called *El Moro*, ſituated on a high rock; and on the walls and baſtions are mounted 40 pieces of cannon. Under the faces of the ſouth-weſt baſtion of the Moro, and more within the entrance of the harbour, is a battery of ſtone called the *Twelve Apoſtles*, almoſt level with the water, and the guns of which carry each a ball of 36 pounds. A little higher, and oppoſite to the Point gate, is the La Divina Paſtora, or the Shepherd's Battery, of 14 guns, level with the water. On the weſt ſide of the entrance, at the point, is a ſquare fort called the *Punta*, with four baſtions well mounted with cannon, about 200 yards diſtant from the Punta gate of the town. On the baſtions of the town, next the harbour, are a number of cannon; and about the middle of the city is another, fort called *El Fuerte*, a ſquare fort with four baſtions, mounted with 22 pieces of cannon, of no great ſtrength; but in this laſt the governor reſides, and in it the king of Spain's treaſures are depoſited till the arrival of the galleons. On the land ſide, from the Punta gate to the dock-yard, there is a rampart with baſtions, faced with ſtone, and earthen parapets with a ditch, which in ſeveral places has fallen in, and is almoſt filled up, particularly behind the Punta and land-gates, near the ſtone-quarries, which, if joined to one another, might be of great detriment to the place in caſe of a ſiege, as a lodgment might be made in them. The ground here riſes with an eaſy aſcent to the land-gate; and is either open paſture or garden ground, well ſtored with the cabbage-tree. Before the land-gate is a ravelin. The hill on a riſing ground from this gate (which is the higheſt part of the town) to the dock-yard, is ſteeper than on the other ſide.

Such are the fortifications of the Havanna, which are the beſt the Spaniards have in the Weſt Indies, as indeed the place is of the greateſt importance. But though ſtrong, they have many defects, and from the ſituation of the town and forts, are commanded by many eminencies, of which an enemy could not fail to take advantage. On the eaſt ſide of the harbour, the Cavannas, on a part of which the Moro is built, commands in a great meaſure that fort, but abſolutely commands the Punta El Fuerte, and the whole north-eaſt part of the city, which is the beſt fortified. On the weſt ſide of the city runs a ſuburb, called *Guadaloupe,* whoſe church is ſituated on an eminence about half a mile from the land-gate, which it is on a level with, and higher than any other part of the fortifications. From the north ſide of this riſing ground, the Punta gate may be flanked; and from the ſouth-eaſt ſide the dock-yard is commanded. Along the north ſide runs an aqueduct, which falling into the ditch at the land-gate, runs down to the dock-yard, both for watering the ſhips and turning a ſaw-mill. About half a mile from the church, is a bridge made over a rivulet that runs into the bay about 100 yards. That road leads to the centre of the iſland, and extends to Baracoa, above 600 miles diſtant. From this bridge to the Lazaretto, is about two miles, with a riſing ground betwixt them. A trench thrown up between theſe two places would cut off the communication with the town by land. From theſe obſervations it will plainly appear, that the Havanna, though well fortified, is not impregnable.

The Havanna has greatly contributed to the maritime ſtrength of the crown of Spain, many ſhips having been built here within theſe few years, from 60 to 80 guns, the iſland furniſhing the fineſt materials, ſuch as oak, pine, cedar, and mahogany. The only defect of the harbour is the narrowneſs of its entry: for though free from bars and ſhoals, yet only one ſhip at a time can enter it; from which circumſtance the galleons have more than once been inſulted, and ſome of them taken, at the mouth of the harbour, the forts there not being able to afford them any aſſiſtance.

Upon the rupture with Spain in 1762, the Britiſh miniſtry ſent a ſquadron and army againſt this place under the command of admiral Pocock and lord Albemarle. The Spaniards had in the harbour at the time a fleet of twelve ſail of the line, two of them but juſt launched, two more on the ſtocks nearly finiſhed, and ſeveral merchant ſhips. The men of war were almoſt ready for ſea; but no account had reached the governor of the intended attack. The place, however, was gallantly defended, and ſuſtained a ſiege of two months and eight days before it could be reduced; when a capitulation was ſigned, and along with the city was yielded a diſtrict of 180 miles to the weſtward. This conqueſt was without doubt in itſelf the moſt conſiderable, and in its conſequences the moſt deciſive, of any they had made ſince the beginning of the war; and in no operation were the courage, ſteadineſs and perſeverance of the Britiſh troops, and the conduct of their leaders more conſpicuous. The acquiſition of this place united in itſelf all the advantages which can be acquired in war. It was a military atchievement of the higheſt claſs. By its effect on the enemy's marine it was equal to the greateſt naval victory, and in the plunder it equalled the produce of a national ſubſidy. Nine ſail of the enemy's line-of battle ſhips were taken; three of their capital ſhips had been ſunk by themſelves at the beginning of the ſiege; two more were in forwardneſs upon the ſtocks, and were afterwards deſtroyed by the captors. The enemy on this occaſion loſt a whole fleet of ſhips of war, beſides a number of conſiderable merchant ſhips; and in ready money, in tobacco collected at the Havanna on account of the king of Spain, and in other valuable merchandizes, the ſum loſt by the Spaniards perhaps did not fall ſhort of three millions ſterling.

The city of Havanna was reſtored by the peace of 1763; and is of the greateſt importance to Spain, being the rendezvous for all their fleets to return from America to Europe, lying at the mouth of the gulph of Florida, through which they are all obliged to paſs. Here the navy of Spain ſtationed in the Weſt Indies ride; and here the galleons, the flota, and other merchant ſhips from other ports both of the continent and iſlands, meet in September, to take in proviſions and water, with great part of their lading, and for the convenience of returning to Spain in a body. A continual fair is held till their departure, which generally happens before the end of the month, when proclamation is made, forbidding any perſon belonging to the fleet to ſtay in town on pain of death; and accordingly, on firing the warning gun, they all retire on board.—The commerce carried on in this port, which is very conſiderable, may be diſtinguiſhed into the particular commerce of the iſland of Cuba, and that more general by the galleons and flota. The former conſiſts in hides, uſually ſtyled of the Havanna, which are excellent, and of great value; ſugar, tobacco, admirable in its kind, &c. Though ſtrangers are prohibited to trade, yet a contraband commerce is carried on briſker here than at La Vera Cruz. Some little trade is carried on by other ports of Cuba, but it is very inconſiderable. As to the general commerce, this port is the place of rendezvous (as already mentioned) for all ſhips, particularly from Carthagena, Puerto Velo, and La Vera Cruz, which return to Spain from the Indies. The Havanna is regularly ſupplied with European goods only by the regiſter ſhips from Cadiz and the Canaries. The flota and galleons bring there no more than the refuſe of their cargoes, which they had not been able to diſpoſe of at Carthagena, Puerto Velo, or La Vera Cruz. When the fleet is in the harbour, proviſions are exceſſively dear on ſhore, and money ſo plenty, that a Spaniard expects half a piece of eight a-day from a male ſlave, and a quarter from a female, out of what they earn for their labour. The fleet generally ſails from thence, through the channel of Bahama, in the month of September; and is the richeſt in the world; ſince, in ſilver and merchandiſe, there is ſeldom leſs than thirty millions of pieces of eight on board, or ſix millions ſeven hundred and fifty thouſand pounds ſterling.—It is natural to imagine, that a port of ſo much conſequence as the Havanna ought to be well fortified. Since it has been reſtored to Spain, many new works have been added, to prevent if poſſible a ſimilar diſaſter befalling it. W. Long. 82. 13. N. Lat. 23. 12.

HAVEL, a river of Brandenburg, which proceeds from a lake in the duchy of Mecklenburg, and running thro' the middle Marche, and thro' Brandenburg and other towns, runs north, and falls into the Elbe.

HAVELBERG, a town of Germany, in the circle of Lower Saxony, and in the electorate of Brandenburg, with a biſhop's ſee, ſecularized in favour of the houſe of Brandenburg. It is ſeated on the river Havel, in E. Long. 12. 43. N. Lat. 53. 4.

HAVEN, a ſea-port or harbour for ſhips. See PORT.

PORT and HARBOUR.—The word is derived from the Saxon *havene*, or the German *hafen*, or the French *havre*; which all ſignify the ſame thing.

HAVERCAMP (Sigibert), a celebrated Dutch ſcholar and critic, profeſſor of hiſtory, eloquence, and the Greek tongue, at Leyden. He was particularly ſkilled in medals; and was the author of ſome eſteemed works in that way, beſide giving good and elegant editions of ſeveral Greek and Latin authors. He died at Leyden in 1742, aged 58.

HAVERFORD-WEST, a town of Pembrokeſhire in South Wales, ſeated in W. Long. 5. N. Lat. 51. 50. It is a neat, well-built, populous place, on the ſide of a hill, which forms a part of the weſt bank of the river Dongledye, 256 miles from London. It is an incorporated town and county of itſelf, governed by a mayor, ſheriff, town-clerk, two bailiffs, ſerjeants at mace, and other officers. The mayor of the town is admiral, coroner, eſcheater, and clerk of the markets, within its precincts. The houſes are well built and well inhabited, and the people enjoy a good trade. Here the aſſizes are held and the county-jail kept. The town enjoys ſeveral privileges, and has its own courts. There are three pariſh-churches within the town, and one in the ſuburbs. Here is alſo a commodious quay for ſhips of burden, a cuſtomhouſe, and a fine ſtone-bridge over the Dongledye, with a good free-ſchool, a charity-ſchool for boys and girls, and an almhouſe. It was formerly fortified with a rampart and caſtle, now demoliſhed.

HAVERHILL, a town of England, in the county of Suffolk, where there is a conſiderable manufactory of checks, cottons, and fuſtains. By the ruins of a church and caſtle ſtill to be ſeen, it appears to have been formerly a place of much greater conſequence than at preſent. It has now only about 300 poor clay-houſes, and one wide ſtreet not paved.

HAUL, an expreſſion peculiar to ſeamen, implying to pull a ſingle rope, without the aſſiſtance of blocks or other ſuch mechanical powers. When a rope is otherwiſe pulled, as by the application of tackles, or the connection with blocks, &c. the term is changed into *bowſing*.

To HAUL the Wind, is to direct the ſhip's courſe nearer to that point of the compaſs from which the wind ariſes. Thus, ſuppoſing a ſhip to ſail ſouth-weſt, with the wind northerly, and ſome particular occaſion requires to haul the wind more weſtward; to perform this operation, it is neceſſary to arrange the ſails more obliquely with her keel; to brace the yards more forward, by ſlackening the ſtarboard and pulling in the larboard braces, and to haul the lower ſheets further aft; and, finally, to put the helm a port, *i. e.* over to the larboard ſide of the veſſel. As ſoon as her head is turned directly to the weſtward, and her ſails are trimmed accordingly, ſhe is ſaid to have hauled the wind four points; that is to ſay, from ſouth-weſt to weſt. She may ſtill go two points nearer to the direction of the wind, by diſpoſing her ſails according to their greateſt obliquity, or, in the ſea-phraſe, by *trimming all ſharp*; and in this ſituation ſhe is ſaid to be cloſe hauled, as ſailing weſt-north-weſt.

HAUM, HALM, or *Hawm*, among farmers, denotes the ſtem or ſtalk of corn, peaſe, beans, &c. from the root to the ear.

HAUNCH, or HANCH, the *Hip*, or that part of the body between the laſt ribs and the thigh.

The haunches of a horſe are too long, if when ſtanding in the ſtable he limps, with his hind-legs farther back than he ought; and when the top or onſet of his tail is not in a perpendicular line to the tip of his hocks, as it always does in horſes whoſe haunches are of a juſt length. There are ſome horſes which though they have too long haunches, yet commonly walk well: ſuch are good to climb hills, but are not at all ſure upon a deſcent; for they cannot ply their hams, and never gallop ſlowly, but always nearly upon a full ſpeed. The art of riding the great horſe has not a more neceſſary leſſon than that of putting a horſe upon his haunches; which, in other words, is called *coupling him well*, or putting him well together, or compact. A horſe that cannot bend or lower his haunches, throws himſelf too much upon his ſhoulder, and lies heavy upon the bridle.

HAVRE, in geography, &c. a French term ſignifying the ſame with haven or harbour.

HAVRE de Grace, a ſea-port town of France, and capital of a diſtrict of the ſame name, is ſeated in the province of Normandy, on the Engliſh Channel, in a large plain at the mouth of the river Seine. It is a ſmall fortified town, nearly of a ſquare figure, divided into two parts by the harbour, ſurrounded with a wall and other works, and defended by a very ſtrong citadel. It is one of the moſt important places in France, on account of its foreign trade and convenient harbour; for which reaſon it was made a diſtinct government from the reſt of Normandy. It was ſurpriſed in 1562 by the Proteſtants, who delivered it to queen Elizabeth; but it was loſt next year. In 1694 it was bombarded by the Engliſh, and alſo in the year 1758. E. Long. 0. 11. N. Lat. 49. 29.

HAURANT, in heraldry, a term peculiar to fiſhes; and ſignifies their ſtanding upright, as if they were refreſhing themſelves by ſucking in the air.

HAUTE FEUILLE (John), an ingenious mechanic born at Orleans in 1647. Though he embraced the ſtate of an eccleſiaſtic, and enjoyed ſeveral benefices, he applied almoſt his whole life to mechanics, in which he made a great progreſs. He had a particular taſte for clock-work, and made ſeveral diſcoveries in it that were of ſingular uſe. It was he who found out the ſecret of moderating the vibration of the balance by means of a ſmall ſteel ſpring, which has ſince been made uſe of. This diſcovery he laid before the members of the Academy of Sciences in 1674; and theſe watches are, by way of eminence, called *pendulum-watches*; not that they have real pendulums, but becauſe they nearly approach to the juſtneſs of pendulums. M. Huygens perfected this happy invention; but having declared himſelf the inventor, and obtained from Louis XIV. a patent for making watches with ſpiral ſprings, the abbé Feuille oppoſed the regiſtering of this privilege, and publiſhed a piece on the ſubject againſt M. Huygens. He wrote a great number of other pieces, moſt of which are ſmall pamphlets conſiſting of a few pages, but very curious; as, 1. His perpetual pendulum, quarto. 2. New inventions, quarto. 3. The art of breathing under water, and the means of preſerving a flame ſhut up in a ſmall place. 4. Reflections on machines for raiſing water.

5. His opinion on the different ſentiments of Mallebranche and Regis relating to the appearance of the moon when ſeen in the horizon. 6. The magnetic balance. 7. A placet to the king on the longitude. 8. Letter on the ſecret of the longitude. 9. A new ſyſtem on the flux and reflux of the ſea. 10. The means of making ſenſible experiments that prove the motion of the earth ; and many other pieces. He died in 1724.

HAUTBOY, a muſical inſtrument of the wind kind, ſhaped much like the flute ; only that it ſpreads and widens towards the bottom, and is ſounded through a reed. The treble is two feet long ; the tenor goes a fifth lower when blown open : it has only eight holes ; but the baſs, which is five feet long, has eleven.

The word is French, *hautbois*, q. d. "high wood ;" and is given to this inſtrument becauſe the tone of it is higher than that of the violin.

HAW, a ſort of berry, the fruit of ſeveral ſpecies of meſpilus, thence denominated *hawthorns*. See MESPILUS.

Haw, among farriers, an excreſcence reſembling a griſtle, growing under the nether eye-lid and eye of a horſe, which, if not timely removed, will put it quite out. See FARRIERY, Sect. xv. 4.

Haw, a ſmall parcel of land ſo called in Kent, as a *Hemphaw*, or *Beanhaw*, lying near the houſe, and incloſed for theſe uſes. But Sir Edward Coke, in an ancient plea concerning Feverſham in Kent, ſays *hawes* are houſes.

Haw-Finch. See LOXIA.

HAWGH, or HOWGH, ſignifies a green plot in a valley as they uſe it in the north of England.

HAWK, in ornithology. See FALCO.

HAWKERS, anciently were fradulent perſons, who went from place to place buying and ſelling braſs, pewter, and other merchandize, which ought to be uttered in open market. In this ſenſe the word is mentioned *anno* 25 Hen. VIII. cap. 6. and 33 *ejuſdem*. cap. 4. The appellation *hawkers* ſeems to have ariſen from their uncertain wandering, like thoſe who, with hawks, ſeek their game where they can find it.

The term is now uſed as ſynonymous with pedlar ; a perſon who travels about the country ſelling wares. Every hawker muſt take out an annual licence, for which he muſt pay 4 l. and if he travels with a horſe, aſs, or mule, for every one of them 8 l. If he travels without a licence, or contrary to it, he forfeits for every offence to the informer, and the poor of the pariſh where diſcovered, 10 l. The acts relating to hawkers do not extend to makers of goods or their agents ; or to thoſe who ſell goods in fairs or markets ; to the ſellers of fiſh, fruit, or other victuals ; nor to the venders of books and newſpapers, 9 and 10 W. cap. 27. 3 and 4 Anne, cap. 4. But hawkers ſhall not, by virtue of ſuch licence, ſell or offer to ſale, any tea or ſpirituous liquors, though with a permit, under the penalty of having the ſame ſeized, and impriſonment and proſecution of the offender, 9 Geo. II. cap. 35. Hawkers who were licenſed on June 23. 1785, may ſet up any buſineſs in the place where they are reſident inhabitants, though not brought up thereto, and may employ therein perſons who have not been apprentices.

HAWKERS is a term alſo applied to thoſe who go up and down London ſtreets and country towns, ſelling newſpapers, pamphlets, &c.

HAWKESWORTH (John), a celebrated Engliſh writer, was born about the year 1719 ; though his epitaph, as we find it in the Gentleman's Magazine for Aug. 1781, makes him to have been born in 1715. He was brought up to a mechanical profeſſion, that of a watchmaker as is ſuppoſed. He was of the Preſbyterian perſuaſion, and a member of the celebrated Tom Bradbury's meeting, from which he was expelled for ſome irregularities. He afterwards devoted himſelf to literature, and became an author of conſiderable eminence. In the early part of life his circumſtances were rather confined. He reſided ſome time at Bromley in Kent, where his wife kept a boarding ſchool. He afterwards became known to a lady who had great property and intereſt in the Eaſt India company, and through her means was choſen a director of that body. As an author, his Adventurer is his capital work ; the merits of which, if we miſtake not, procured him the degree of LL.D. from Herring archbiſhop of Canterbury. When the deſign of compiling a narrative of the diſcoveries in the South Seas was on foot, he was recommended as a proper perſon to be employed on the occaſion : but in truth he was not a proper perſon, nor did the performance anſwer expectation. Works of taſte and elegance, where imagination and the paſſions were to be affected, were his province ; not works of dry, cold, accurate narrative. However, he executed his taſk, and is ſaid to have received for it the enormous ſum of 6000 l. He died in 1773 ; ſome ſay of high living ; others, of chagrin from the ill reception of his Narrative : for he was a man of the keeneſt ſenſibility, and obnoxious to all the evils of ſuch irritable natures. On a handſome marble monument at Bromley in Kent is the following inſcription, the latter part of which is taken from the laſt number of The Adventurer :

To the memory of
JOHN HAWKESWORTH, LL. D.
Who died the 16th of November
MDCCLXXIII, aged 58 years.
That he lived ornamental and uſeful
To ſociety in an eminent degree
Was among the boaſted felicities
Of the preſent age ;
That he laboured for the benefit of ſociety,
Let his own pathetic admonitions
Record and realize.

"The hour is haſting, in which whatever praiſe
" or cenſure I have acquired will be remembered
" with equal indifference. Time, who is impatient
" to date my laſt paper, will ſhortly moulder the
" hand which is now writing it in the duſt, and ſtill
" the breaſt that now throbs at the reflection. But
" let not this be read as ſomething that relates
" only to another ; for a few years only can divide
" the eye that is now reading from the hand that
" has written."

HAWKING, the exerciſe of taking wild-fowl by means of hawks. The method of reclaiming, manning, and bringing up a hawk to this exerciſe, is called *falconry*. See FALCONRY.

There are only two countries in the world where we have any evidence that the exerciſe of hawking was very anciently in vogue. Theſe are, Thrace and Britain. In the former, it was purſued merely as the diverſion of a particular diſtrict, if we may believe Pliny*, whoſe account is rendered obſcure by the darkneſs of his own ideas of the matter. The primæval Britons, with a fondneſs for the exerciſe of hunting, had alſo a taſte for that of hawking; and every chief among them maintained a conſiderable number of birds for that ſport. It appears alſo from a curious paſſage in the poems of Oſſian †, that the ſame diverſion was faſhionable at a very early period in Scotland. The poet tells us, that a peace was endeavoured to be gained by the proffer of 100 managed ſteeds, 100 foreign captives, and "100 hawks with fluttering wings, that fly acroſs the ſky." To the Romans this diverſion was ſcarce known in the days of Veſpaſian; yet it was introduced immediately afterwards. Moſt probably they adopted it from the Britons; but we certainly know that they greatly improved it by the introduction of ſpaniels into the iſland. In this ſtate it appears among the Roman Britons in the ſixth century. Gildas, in a remarkable paſſage in his firſt epiſtle, ſpeaks of Maglocunnus, on his relinquiſhing the ſphere of ambition, and taking refuge in a monaſtery; and proverbially compares him to a dove, that haſtens away at the noiſy approach of the dogs, and with various turns and windings takes her flight from the talons of the hawk.

In after times, hawking was the principal amuſement of the Engliſh: a perſon of rank ſcarce ſtirred out without his hawk on his hand; which, in old paintings, is the criterion of nobility. Harold, afterwards king of England, when he went on a moſt important embaſſy into Normandy, is painted embarking with a bird on his fiſt, and a dog under his arm: and in an ancient picture of the nuptials of Henry VI. a nobleman is repreſented in much the ſame manner; for in thoſe days, *it was thought ſufficient for noblemen to winde their horn, and to carry their hawk fair, and leave ſtudy and learning to the children of mean people*. The former were the accompliſhments of the times; Spenſer makes his gallant Sir Triſtram boaſt,

> Ne is there hawk which mantleth her on pearch,
> Whether high towring, or accoaſting low,
> But I the meaſure of her flight doe ſearch,
> And all her prey, and all her diet know. B. vi. Cento. 2.

In ſhort, this diverſion was, among the old Engliſh, the pride of the rich, and the privilege of the poor; no rank of men ſeems to have been excluded the amuſement: we learn from the book of St Alban's, that every degree had its peculiar hawk, from the *emperor* down to the *holy-water clerk*. Vaſt was the expence that ſometimes attended this ſport. In the reign of James I. Sir Thomas Monſon is ſaid to have given 1000l. for a caſt of hawks: we are not then to wonder at the rigour of the laws that tended to preſerve a pleaſure that was carried to ſuch an extravagant pitch. In the 34th of Edward III. it was made felony to ſteal a hawk; to take its eggs, even in a perſon's own ground, was puniſhable with impriſonment for a year and a day, beſides a fine at the king's pleaſure: in queen Elizabeth's reign, the impriſonment was reduced to three months; but the offender was to find ſecurity for his good behaviour for ſeven years, or lie in priſon till he did. Such was the enviable ſtate of the times of *old* England; during the whole day, the gentry were given to the fowls of the air and the beaſts of the field; in the evening, they celebrated their exploits with the moſt abandoned and brutiſh ſottiſhneſs; at the ſame time, the inferior rank of people, by the moſt unjuſt and arbitrary laws, were liable to capital puniſhments, to fines, and loſs of liberty, for deſtroying the moſt noxious of the feathered tribe.

According to Olearius, the diverſion of hawking is more followed by the Tartars and Perſians than ever it was in any part of Europe. *Il n'y avoit point de hutte* (ſays he) *qui n'euſt ſon aigle ou ſon faucon.*

The falcons or hawks that were in uſe in theſe kingdoms, are now found to breed in Wales, and in North Britain and its iſles. The peregrine falcon inhabits the rocks of Caernarvonſhire. The ſame ſpecies, with the gyrfalcon, the gentil, and the goſhawk, are found in Scotland, and the lanner in Ireland.

We may here take notice, that the Norwegian breed was, in old times, in high eſteem in England; they were thought bribes worthy a king. Jeoffrey Fitzpierre gave two good Norway hawks to king John, to obtain for his friend the liberty of exporting 100 wt. of cheeſe: and Nicholas the Dane was to give the king a hawk every time he came into England, that he might have free liberty to traffic throughout the king's dominions.

They were alſo made the tenures that ſome of the nobility held their eſtates by, from the crown. Thus Sir John Stanley had a grant of the Iſle of Man from Henry IV. to be held of the king, his heirs, and ſucceſſors, by homage and the ſervice of two falcons, payable on the day of his or their coronation. And Philip de Haſtang held his manor of Combertoun in Cambridgeſhire, by the ſervice of keeping the king's falcons.

Hawking, though an exerciſe now much diſuſed among us, in compariſon of what it anciently was, does yet furniſh a great variety of ſignificant terms, which ſtill obtain in our language. Thus, the parts of a hawk have their proper names.—The legs, from the thigh to the foot, are called *arms*; the toes, the *petty ſingles*; the claws, the *pounces*.—The wings are called the *ſails*; the long feathers thereof, the *beams*; the two longeſt, the *principal feathers*; thoſe next thereto, the *flags*.—The tail is called the *train*; the breaſt-feathers, the *mails*; thoſe behind the thigh, the *pendant feathers*.—When the feathers are not yet full grown, ſhe is ſaid to be *unſummed*; when they are complete, ſhe is *ſummed*: The craw, or crop, is called the *gorge*:—The pipe next the fundament, where the fæces are drawn down, is called the *pannel*:—The ſlimy ſubſtance lying in the pannel, is called the *glut*:—The upper and crooked part of the bill is called the *beak*; the nether-part, the *clap*: the yellow part between the beak and the eyes, the *ſear* or *ſere*; the two ſmall holes therein, the *nares*.

As to her furniture:—The leathers, with bells buttoned on her legs, are called *bewits*.—The leathern thong, whereby the falconer holds the hawk, is called the *leaſe* or *leaſh*; the little ſtraps, by which the leaſe is faſtened to the legs, *jeſſes*; and a line or pack thread faſtened to the leaſe, in diſciplining her, a *creance*.—

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* *Lib.* x. 8.

† Vol. I. p. 115.

Biogr. Brit. art. *Caxton.*

Maddox Antiquit. Exchequer, I. 469.

Blunt's Anc. Tenures 20.

A cover for her head, to keep her in the dark, is called a *hood*; a large wide hood, open behind, to be wore at firſt, is called a *rufter hood:* To draw the ſtrings, that the hood may be in readineſs to be pulled off, is called *unſtriking the hood.*—The blinding a hawk juſt taken, by running a thread through her eye-lids, and thus drawing them over the eyes, to prepare her for being hooded, is called *ſeeling.*—A figure or reſemblance of a fowl, made of leather and feathers, is called a *lure.*—Her reſting-place, when off the falconer's fiſt, is called the *perch.*—The place where her meat is laid, is called the *hack;* and that wherein ſhe is ſet, while her feathers fall and come again, the *mew.*

Something given a hawk, to cleanſe and purge her gorge, is called *caſting.*—Small feathers given her to make her caſt, are called *plumage:*—Gravel given her to help to bring down her ſtomach, is called *rangle:* Her throwing up filth from the gorge after caſting, is called *gleaming.*—The purging of her greaſe, &c. *enſeaming.*—A being ſtuffed is called *gurgiting.*—The inſerting a feather in her wing, in lieu of a broken one, is called *imping.*—The giving her a leg, wing, or pinion of a fowl to pull at, is called *tiring:*—The neck of a bird the hawk preys on, is called the *inke:*——What the hawk leaves of her prey, is called the *pill* or *pelf.*

There are alſo proper terms for her ſeveral actions.—When ſhe flutters with her wings, as if ſtriving to get away, either from perch or fiſt, ſhe is ſaid to *bate.*—When ſtanding too near they fight with each other, it is called *crabbing:*—When the young ones quiver, and ſhake their wing in obedience to the elder, it is called *cowring:*—When ſhe wipes her beak after feeding, ſhe is ſaid to *feak:*—When ſhe ſleeps, ſhe is ſaid to *jouk:*—From the time of exchanging her coat, till ſhe turns white again, is called her *intermewing:*—Trading is called *cawking:* When ſhe ſtretches one of her wings after her legs, and then the other, it is called *mantling:*—Her dung is called *muting:* when ſhe mutes a good way from her, ſhe is ſaid to *ſlice*; when ſhe does it directly down, inſtead of yerking backwards, ſhe is ſaid to *ſlime;* and if it be in drops, it is called *dropping.*—When ſhe as it were ſneezes, it is called *ſniting.*—When ſhe raiſes and ſhakes herſelf, ſhe is ſaid to *rouze:*—When, after mantling, ſhe croſſes her wings together over her back, ſhe is ſaid to *warble.*

When a hawk ſeizes, ſhe is ſaid to *bind:*—When, after ſeizing, ſhe pulls off the feathers, ſhe is ſaid to *plume.*—When ſhe raiſes a fowl aloft, and at length deſcends with it to the ground, it is called *truſſing.*—When, being aloft, ſhe deſcends to ſtrike her prey, it is called *ſtooping.*—When ſhe flies out too far from the game, ſhe is ſaid to *rake.*—When, forſaking her proper game, ſhe flies at pyes, crows, &c. that chance to croſs her, it is called *check.*—When, miſſing the fowl, ſhe betakes herſelf to the next check, ſhe is ſaid to *fly on head.*——The fowl or game ſhe flies at is called the *quarry.*—The dead body of a fowl killed by the hawk, is called a *pelt.*—When ſhe flies away with the quarry, ſhe is ſaid to *carry.*—When in ſtooping ſhe turns two or three times on the wing, to recover herſelf ere ſhe ſeizes, it is called *canceliering.*—When ſhe hits the prey, yet does not truſs it, it is called *ruff.*—The making a hawk tame and gentle, is called *reclaiming.*—The bringing her to endure company, *manning* her.—An old ſtaunch hawk, uſed to fly and ſet example to a young one, is called a *make-hawk.*

The reclaiming, manning, and bringing up a hawk to the ſport, is not eaſy to be brought to any preciſe ſet of rules.—It conſiſts in a number of little practices and obſervances, calculated to familiarize the falconer to his bird, to procure the love thereof, &c. See the article Falconry.

When your hawk comes readily to the lure, a large pair of luring-bells are to be put upon her: and the more giddy-headed and apt to rake out your hawk is, the larger muſt the bells be. Having done this, and ſhe being ſharp-ſet, ride out in a fair morning, into ſome large field unencumbered with trees or wood, with your hawk on your fiſt; then having looſened her hood, whiſtle ſoftly, to provoke her to fly; unhood her, and let her fly with her head into the wind; for by that means ſhe will be the better able to get upon the wing, and will naturally climb upwards, flying a circle. After ſhe has flown three or four turns, then lure her with your voice, caſting the lure about your head, having firſt tied a pullet to it; and if your falcon come in and approach near you, caſt out the lure into the wind, and if ſhe ſtoop to it reward her.

You will often find, that when ſhe flies from the fiſt, ſhe will take ſtand on the ground: this is a fault which is very common with ſoar-falcons. To remedy this, fright her up with your wand; and when you have forced her to take a turn or two, take her down to the lure, and feed her. But if this does not do, then you muſt have in readineſs a duck ſealed, ſo that ſhe may ſee no way but backwards, and that will make her mount the higher. Hold this duck in your hand, by one of the wings near the body; then lure with the voice, to make the falcon turn her head; and when ſhe is at a reaſonable pitch, caſt your duck up juſt under her; when, if ſhe ſtrike, ſtoop, or truſs the duck, permit her to kill it, and reward her by giving her a reaſonable gorge. After you have practiſed this two or three times, your hawk will leave the ſtand, and, delighted to be on the wing, will be very obedient.

It is not convenient, for the firſt or ſecond time, to ſhow your hawk a large fowl; for it frequently happens, that they eſcape from the hawk, and ſhe, not recovering them, rakes after them: this gives the falconer trouble, and frequently occaſions the loſs of the hawk. But if ſhe happens to purſue a fowl, and being unable to recover it, gives it over, and comes in again directly, then caſt out a ſealed duck; and if ſhe ſtoop and truſs it acroſs the wings, permit her to take her pleaſure, rewarding her alſo with the heart, brains, tongue, and liver. But if you have not a quick duck, take her down with a dry lure, and let her plume a pullet and feed upon it. By this means a hawk will learn to give over a fowl that rakes out, and on hearing the falconer's lure, will make back, and know to hold in the head.

Some hawks have a diſdainful coyneſs, proceeding from their being high fed: ſuch a hawk muſt not be rewarded though ſhe ſhould kill: but you may give her leave to plume a little; and then taking a ſheep's heart cold, or the leg of a pullet, when the hawk is buſy in pluming, let either of them be conveyed into the body of the fowl, that it may ſavour of it; and when the hawk has eaten the heart, brains, and tongue of the fowl, take out what is incloſed, call her to your fiſt, and feed her with it: afterwards give her ſome of the feathers of the fowl's neck, to ſcower her, and make her caſt.

If your hawk be a ſtately high-flying one, ſhe ought not to take more than one flight in a morning; and if ſhe be made for the river, let her not fly more than twice: when ſhe is at the higheſt, take her down with your lure; and when ſhe has plummed and broken the fowl a little, feed her, by which means you will keep her a high-flyer, and fond of the lure.

HAWKWOOD (Sir John), a famous Engliſh general, was the ſon of a tanner at Heddingham-Sibil in Eſſex, where he was born in the reign of Edward III. He was bound apprentice to a taylor in London; but being fortunately preſſed into the army, was ſent abroad, where his genius ſoon expanded itſelf, and ſurmounted the narrow prejudices which adhered to his birth and occupation. He ſignalized himſelf as a ſoldier in France and Italy, and particularly at Piſa and Florence. He commanded with great ability and ſucceſs in the army of Galeacia duke of Milan: and was in ſuch high eſteem with Barnabas his brother, that he gave him Domitia his natural daughter in marriage, with an ample fortune. He died at Florence, full of years and military fame, in 1394.

HAWSE, or HAUSE, is generally underſtood to imply the ſituation of the cables before the ſhip's ſtem, when ſhe is moored with two anchors out from forward, viz. one on the ſtarboard, and the other on the larboard bow. Hence it is uſual to ſay, *ſhe has a clear hawſe*, or *a foul hawſe*. It alſo denotes any ſmall diſtance *a head* of a ſhip, or between her head and the anchors employed to ride her, as, "He has anchored in our hawſe, The brig fell athwart our hawſe," &c.

A ſhip is ſaid to ride with a clear hawſe, when the cables are directed to their anchors, without lying athwart the ſtem, or croſſing, or being twiſted round each other by the ſhip's winding about, according to the change of the wind, tide, or current.

A foul hawſe, on the contrary, implies that the cables lie acroſs the ſtem, or bear upon each other, ſo as to be rubbed and chafed by the motion of the veſſel. The hawſe accordingly is foul, by having either a croſs, an elbow, or a round turn. If the larboard cable, lying acroſs the ſtem, points out on the ſtarboard ſide, while the ſtarboard cable at the ſame time grows out on the larboard ſide, there is a croſs in the hawſe. If, after this, the ſhip, without returning to her former poſition, continues to wind about the ſame way, ſo as to perform an entire revolution, each of the cables will be twiſted round the other, and then directed out from the oppoſite bow, forming what is called a round turn. An elbow is produced when the ſhip ſtops in the middle of that revolution, after having had a croſs: or, in other words, if ſhe rides with her head northward with a clear hawſe, and afterwards turns quite round ſo as to direct her head northward again, ſhe will have an elbow.

HAWSE-Holes, certain cylindrical holes cut through the bows of a ſhip on each ſide of the ſtem, through which the cables paſs in order to be drawn into or let out of the veſſel as occaſion requires. They are fortified on each ſide by the

HAWSE-Pieces, a name given to the foremoſt timbers of a ſhip, whoſe lower ends reſt on the knuckle-timber, or the foremoſt of the cant-timbers. They are generally parallel to the ſtem, having their upper ends ſometimes terminated by the lower part of the beak-head; and otherwiſe, by the top of the bow, particularly in ſmall ſhips and merchantmen.

HAWSER, a large rope which holds the middle degree between the *cable* and *tow-line*, in any ſhip whereto it belongs, being a ſize ſmaller than the former, and as much larger than the latter.

HAY, any kind of graſs cut and dried for the food of cattle.

The time of mowing graſs for hay muſt be regulated according to its growth and ripeneſs; nothing being more prejudicial to the crop than mowing it too ſoon; becauſe the ſap is not then fully come out of the root, and when made into hay, the graſs ſhrinks away to nothing. It muſt not, however, be let ſtand too long till it have ſhed its ſeeds. When the tops of the graſs look brown, and begin to bend down, and the red honeyſuckle flowers begin to wither, you may conclude it ripe for mowing.

Sain-Foin HAY, is of ſeveral ſorts, which may be diſtinguiſhed by the following terms, viz. 1. The virgin. 2. The bloſſomed. 3. The full-grown. And, 4. The threſhed hay. The firſt of theſe is beyond compariſon the beſt. It muſt be cut before the bloſſoms generally appear; for when it ſtands till it is full blown, the moſt ſpirituous and nouriſhing parts of its juice are ſpent, the ſap is much impoveriſhed, and the ſain-foin can never recover that richneſs it had in its virgin ſtate. But this fine hay cannot well be had of uncultivated ſain-foin; becauſe that may not be much above an handful high when it is in a condition to be cut; it would then make a very light crop, and would be a great while before it ſprang up again: but the rich will have two or three tuns to an acre, and ſpring again immediately for a ſecond crop; ſo that little or none in quantity would be loſt by ſo great an improvement of its quality.

The ſecond ſort is that cut in the flower, which, though much inferior to the virgin-hay, far exceeds any other kind as yet commonly propagated in Britain; and if it be a full crop, it may amount to three tuns an acre. This is that ſain-foin which is commonly made; and the larger it is, the more nouriſhing it is for horſes.

The next ſort of ſain-foin is the full grown, cut when the bloſſoms are gone or going off; this alſo is good hay, though it falls ſhort by many degrees of the goodneſs of the other two ſorts; but it makes a greater crop than either of them, becauſe it grows to its full bulk, and ſhrinks little in drying.

The laſt ſort is the threſhed hay; which, when not damaged by wet weather, has been found more nouriſhing to horſes than coarſe water-meadow hay: and, when it is cut ſmall by an engine, is good for cattle, and much better than the chaff of corn. The beſt time to cut it, is when the greateſt part of the ſeed is well filled; the firſt-blown ripe, and the laſt-blown beginning to be full.

The goodneſs of the hay depends greatly upon the manner of ordering it. The beſt hay in all England is made of ſain-foin, without ever ſpreading it. This method though it be longer before it be finiſhed, coſts leſs labour than the other. If ſain-foin be laid up pretty green, it will take no damage, provided it be ſet in ſmall round ricks, with a large baſket drawn up in the middle of each, to have a vent-hole, through which the ſuperfluous moiſture of the hay may tranſpire. As ſoon as its heating is over, theſe ricks ought to be thatched; and all ſain-foin ricks, that are made when the hay is full dried in the cocks, ought to be thatched immediately after the making them. That which is laid up moſt dried, will come out of the rick of a green colour; but that which has been much heated in the rick, will be brown.

The ſeed affords the owner another opportunity of making a profit of his ſain-foin: but this, if the hoeing huſbandry were general would not be vendible in great quantities for planting; becauſe the ordinary crop of an acre will produce ſeed enough to drill an hundred acres, which would not want planting for a long time. The other uſe then of this ſeed is for provender; and it has been affirmed by ſome who have made trials of it, that three buſhels of good ſain-foin ſeed given horſes, will nouriſh them as much as four buſhels of oats; and when well ordered, it is ſo ſweet, that moſt ſorts of cattle are greedy of it.

Hay-Making. See AGRICULTURE, n° 199, *et ſeq.*

HAY, a town of Brecknockſhire, in Wales, ſeated near the confluence of the rivers Wye and Dulas. It was a town of good note in the time of the Romans; it being then fortified with a caſtle and a wall, which were ruined in the rebellion of Owen Glendower. It is at preſent a pretty good town; and the market is large for corn, cattle and proviſions. W. Long. 0. 56. N. Lat. 52 10.

HAY (William, Eſq;), an agreeable Engliſh writer, was born at Glenburne in Suſſex, about 1700, as is conjectured; and educated at Headley-ſchool. In 1730, he publiſhed a poem, called *Mount Caburn*, dedicated to the ducheſs of Newcaſtle; in which he deſcribes the beauties of his native country, and celebrates the virtues of his friends. When lord Hardwick was called up to the houſe of lords in, 1734, he was choſen to ſucceed him in repreſenting the borough of Seaford among the commons: and he repreſented this borough for the remainder of his life. He defended the meaſures of Sir Robert Walpole, and was the ſuppoſed author of a miniſterial pamphlet, intitled, A Letter to a Freeholder on the late Reduction of the Land-tax to one Shilling in the Pound; which had been printed in 1732. In 1735, he publiſhed remarks on the Laws relative to the Poor, with propoſals for their better Relief and Employment; and at the ſame time brought in a bill for the purpoſe. He made another attempt of this kind, but without effect. May 1738, he was appointed a commiſſioner of the Victualling-office. In 1753, appeared *Religio Philoſophi*; or, the Principles of Morality and Chriſtianity, illuſtrated from a View of the Univerſe, and of Man's Situation in it. This was followed, in 1754, by his Eſſay on Deformity; in which he rallies his own imperfection in this reſpect with much livelineſs and good humour. "Bodily deformity (ſays he), is very rare. Among 558 gentlemen in the Houſe of Commons, I am the only one that is ſo. Thanks to my worthy conſtituents, who never objected to my perſon, and I hope never to give them cauſe to object to my behaviour." The ſame year, he tranſlated Hawkins Browne *De Immortalitate Animi*. 1755, he tranſlated and modernized ſome Epigrams of Martial; but ſurvived this publication only a ſhort time, dying June 19. the ſame year. A little time before, he had been appointed keeper of the Records in the Tower; and it is ſaid that his attention and aſſiduity during the few months he held that office were eminently ſerviceable to his ſucceſſors.—He left a ſon, who inherited the imperfect form of his father. This gentleman went into the ſervice of the Eaſt India company, where he acquired rank, fortune, and reputation; but being one of thoſe who oppoſed Coſſim Alley Kawn, and unfortunately falling into his hands, was, with other gentlemen, ordered to be put to death at Patna, Oct. 5. 1763.

HAYES (Charles, Eſq;), a very ſingular perſon whoſe great erudition was ſo concealed by his modeſty, that his name is known to very few, though his publications are many. He was born in 1678, and became diſtinguiſhed in 1704 by A Treatiſe on Fluxions, folio: the only work to which he ever ſet his name. In 1710, came out a ſmall 4to pamphlet of 19 pages, intituled, A new and eaſy Method to find out the Longitude from obſerving the Altitudes of the Celeſtial Bodies: and, in 1723, The Moon, a Philoſophical Dialogue; tending to ſhow, that the moon is not an opaque body, but, has original light of her own. During a long courſe of years, the management of the late Royal African company lay in a manner wholly upon Mr Hayes, he being annually either ſub-governor or deputy-governor; notwithſtanding which, he continued his purſuit after general knowledge. To a ſkill in the Greek and Latin as well as modern languages, be added the knowledge of the Hebrew; and publiſhed ſeveral pieces, relating to the tranſlation and chronology of the ſcriptures. The African company being diſſolved in 1752, he retired to Down in Kent, where he gave himſelf up to ſtudy. May 1753, he began to compile in Latin his Chronographia Aſiatica & Ægyptiaca, which he lived to finiſh, but not to publiſh; which, however, was publiſhed afterwards. Auguſt 1758, he left his houſe in Kent, and took chambers in Gray-Inn, where he died, December 18. 1760, in his 82d year. The title of his poſthumous works runs thus: *Chronographiæ Aſiaticæ & Egyptiacæ Specimen; in quo,* 1. *Origo Chronologiæ* LXX *Interpretum inveſtigatur.* 2. *Conſpectus totius operis exhibetur*, 8vo.

HAYNAULT. See HAINAULT.

HAYS, particular nets for taking rabbits, hares, &c. common to be bought in ſhops that ſell nets in London, and they may be had larger or ſhorter as you thing fit; from 15 to 20 fathoms is a good length, and for depth a fathom.

As rabbits often ſtraggle abroad about mid-day for freſh graſs, where you perceive a number gone forth to any remote bracks or thickets, pitch two or three of theſe hays about their burrows; lie cloſe there: but in caſe you have not nets enough to incloſe all their burrows, ſome may be ſtopped up with ſtones, &c. Then ſet out with the coney-dog to hunt up and down at a good diſtance, and draw on by degrees to the man who is with you, and lies cloſe by the hay, who may take them as they bolt into it.

HAYWARD, the perſon who keeps the common herd or cattle of a town. He is appointed by the lord's court; and his office is to ſee that the cattle neither break nor crop the hedges of incloſed grounds.

HAYWARD (Sir John), an eminent Engliſh hiſtorian and biographer in the beginning of the 17th century, was educated in the univerſity of Cambridge, where he took the degree of doctor of laws. In 1610, he was appointed one of the hiſtoriographers of a college then at Chelſea; and in 1619, received the honour of knighthood. He wrote, 1. The lives of the three Norman kings of England, William I. and II. and Henry I. 2. The firſt part of the life and reign of king Henry IV. 3. The life and reign of king Edward VI.; and ſeveral theological works. He died in 1627.

HAZAEL, an officer belonging to Benhadad king of Syria, cauſed that prince to be put to death, and reigned in his ſtead. He defeated Joram, Jehu, and Jehoahaz, kings of Iſrael; and, after his death, was ſucceeded by Benhadad his ſon, 852 B. C.

HAZARD, or CHANCE, in gaming. See GAMING.

HAZARD, a game on dice, without tables, is very properly ſo called: ſince it ſpeedily makes a man, or undoes him.

It is played with only two dice, and as many may play at it as can ſtand round the largeſt round table.

Two things are chiefly to be obſerved, viz. main and chance; the latter belonging to the caſtor, and the former, or main, to the other gameſters. There can be no main thrown above nine, nor under five; ſo that five ſix, ſeven, eight and nine, are the only mains flung at hazard. Chances and nicks are from four to ten; thus four is a chance to nine, five to eight, ſix to ſeven, ſeven to ſix, eight to five; and nine and ten a chance to five, ſix, ſeven, and eight: in ſhort, four, five, ſix, ſeven, eight, nine, and ten, are chances to any main, if any of theſe nick it not. Now nicks are either when the chance is the ſame with the main, as five and five; or the like; or ſix and twelve, ſeven and eleven eight and twelve. Here obſerve, that twelve is out to nine, ſeven, and five; eleven is out to nine, eight, ſix, and five; ames-ace and duce-ace, are out to all mains whatever.

HAZLE, or HAZEL, in botany. See CORYLUS. The kernels of the fruit have a mild farinaceous, oily taſte agreeable to moſt palates. Squirrels and mice are fond of them, as well as ſome birds, ſuch as jays, nutcrackers, &c. A kind of chocolate has been prepared from them and there are inſtances of their having been formed into bread. The oil expreſſed from them is little inferior to the oil of almonds: and is uſed by painters and by chemiſts for receiving and retaining odours. The charcoal made of the wood is uſed by painters in drawing.—Some of the Highlanders, where ſuperſtition is not totally ſubſided, look upon the tree itſelf as unlucky; but are glad to get two of the nuts naturally conjoined, which is a good omen. Theſe they call *cno-chomblaich*, and carry them as an efficacious charm againſt witchcraft.

Evelyn tells us that no plant is more proper for thickening of copſes than the hazle, for which he directs the following expeditious method. Take a pole of hazle (aſh or poplar may alſo be uſed) of 20 or 30 feet in length, the head a little lopped into the ground, giving it a chop near the ground to make it ſuccumb; this faſtened to the earth with a hook or two, and coved with ſome freſh mould at a competent depth (as gardeners lay their carnations), will produce a great number of ſuckers; and thicken and furniſh a copſe ſpeedily.

HAZLE-Earth, or *Hazley-Earth*, a kind of red loam, which is ſaid to be an excellent mixture with other ſorts of earth; uniting what is too looſe, cooling what is too hot, and gently retaining the moiſture.

Witch-HAZEL. See HAMAMALIS.

HEAD, the uppermoſt or foremoſt part of the body of an animal. See ANATOMY, Part I. ſect. ii.

HEAD-Ach, a moſt troubleſome ſenſation in the head, produced by various cauſes, and attended with different ſymptoms, according to its different degrees and the place where it is ſeated. See (the *Index* ſubjoined to) MEDICINE.

Dragon's HEAD, in aſtronomy, is the aſcending node of the moon or other planet.

HEAD of a Ship, an ornamental figure erected on the continuation of a ſhip's ſtem, as being expreſſive of her name and emblematical of war, navigation, commerce, &c.

HEAD, is alſo uſed in a more enlarged ſenſe to ſignify the whole front or fore-part of the ſhip, including the bows on each ſide: the head therefore opens the column of water through which the ſhip paſſes when advancing. Hence we ſay, head-ſails, head-ſea, head-way, &c.

Thus, fig. 1. Plate CCXXVI. repreſents one ſide of the fore-part or head of a 74 gunſhip, together with part of the bow, keel, and gunnel. The names of the ſeveral pieces, exhibited therein, are as follow:

AA Fore-part of the keel. with *a a* the two falſe keels beneath it.

AC the ſtem.

a a The cat-head.

b b The ſupporter of the cat head.

c c The knight-head, or bollard-timber, of which there is one on each ſide, to ſecure the inner end of the bowſprit.

dd The hauſe-holes.

e e The naval-hoods, *i. e.* thick pieces of plank laid upon the bow to ſtrengthen the edges of the hauſe-holes.

f The davit-chock, by which the davit is firmly wedged while employed to fiſh the anchor.

g The bulk-head, which terminates the forecaſtle on the fore-ſide, being called the *beak-head bulk-head* by ſhipwrights,

H The gun ports of the lower deck.

h The gun ports of the upper deck and fore caſtle.

I, I, The channels, with their dead eyes and chain-plates.

i The gripe or fore-foot, which unites the keel with the ſtem forming a part of either.

k k Theſe dotted lines repreſent the thickneſs and deſcent of the different decks from the fore-part of the ſhip towards the middle. The loweſt of the three dotted lines *l* expreſſes the convexity of the beams, or the difference between the height of the deck in the midde of its breadth and at the ſhip's ſide. This is alſo exhibited more clearly in the *MIDSHIP-Frame;* where the red curve of the beam is delineated. N. B. Their lines muſt be always parallel to the lines which terminate the gun-ports above and below.

m m The timbers of the head, and part of the bowſprit.

X The rails of the head which lie acroſs the timbers.

QZ Fore-part of the main-wale.

RX Fore-part of the channel-wale.

UC The load water-line.

Fig. 23 preſents a head view of a ſhip, with the projection of her principal timbers, and all her planks laid on one ſide.

It is evident that the fore-part of a ſhip is called its *head*, from the affinity of motion and poſition it bears to a fiſh, and in general to the horizontal ſituation of all animals whilſt ſwimming.

By the HEAD; the ſtate of a ſhip, which is laden deeper at the fore-end than the after-end.

HEAD-Borow, or *HEAD-Borough*, ſignifies the perſon who is the chief of the frank-pledge, and had anciently the principal direction of thoſe within his own pledge. He was alſo called *burrow-head, burſhoulder,* now *borſholder, third-borow, tything-man, chief-pledge,* and *borow elder*, according to the diverſity of ſpeech in different places. This office is now uſually called a *high-conſtable*. The head-borow was the chief of ten pledges; the other nine were called *hand borows*, or *plegii manuales*, &c.

HEAD-Mould-ſhot, a diſeaſe in children wherein the ſutures of the ſkull, generally the coronal, *ride*; that is, have their edges ſhot over one another: and are ſo cloſe locked together, as to compreſs the internal parts; the meninges, or even the brain itſelf. This diſeaſe uſually occaſions convulſions, and is ſuppoſed to admit of no cure from medicine, unleſs room could be given by manual operation or a divulſion of the ſutures.

The head-mould-ſhot is the diſorder oppoſite to the horſe-ſhoe head.

HEAD Pence, an exaction of a certain ſum formerly collected by the ſheriff of Northumberland from the inhabitants of that county, without any account to be made to the king. This was aboliſhed by the ſtatute 23 Hen. VI. cap. 7.

HEAD-Tin, in metallurgy, is a peparation of tin-ore towards the fitting it for working into metal. When the ore has been pounded and twice waſhed, that part of it which lies upppermoſt, or makes the ſurface of the maſs in the tub, is called the *head tin*: this is ſeparated from the reſt, and after a little more waſhing becomes fit for the blowing houſe.

HEAD-Faſt, a rope employed to faſten a ſhip to a wharf, chain, or buoy, or to ſome other veſſel along ſide.

HEAD-Land, a name frequently given to a cape or promontory.

HEAD Dreſs, amongſt the Jewiſh, Grecian, and Roman ladies, as among ourſelves, was various, according to the different periods of time, and the fluctuation of faſhion. In general, it principally conſiſted of their hair differently tricked out. It was uſually divided before, with a bodkin, into two equal parts; ſometimes it was covered with a net, or put into a kind of purſe, or tied behind in the form of a knot, or bound back and plaited with ribbands. It was waſhed with great care; eſſence and perfumes were applied to it, and gold-duſt ſometimes made uſe of as powder. Pearls and jewels made a part of their ornaments; and pendants were worn in the ear. To cover the defect of hair, perukes were made uſe of by the gentlemen of Rome. And we read that Otho had a covering of falſe hair, becauſe he had not much of his own. See HAIR-JEWELS.

Both Grecian and Roman ladies wore têtes. But whether they ever built up their heads ſo high as the Engliſh, or their continental neighbours, will admit of a diſpute.

HEADMOST, the ſituation of any ſhip or ſhips which are the moſt advanced in a fleet, or line of battle.

HEAD-Rope, that part of the bolt-rope which terminates any of the principal ſails on the upper edge, which is accordingly ſewed thereto. See the article BOLT-ROPE.

HEAD-Sails, a general name for all thoſe ſails which are extended on the fore-maſt and bowſprit, and employed to command the fore-part of the ſhip: ſuch are the fore-ſail, fore-top-ſail, fore-top-gallant-ſail, jib, fore-ſtay-ſail, and the ſprit-ſail with its top-ſail. This term is uſed in oppoſition to *after-ſails*, viz. all thoſe which are extended on the mizen maſt, and on the ſtays between the mizen and main maſts.

HEAD-to-wind; the ſituation of a ſhip or boat, when her head is turned to windward.

HEAD-Way, the motion of advancing at ſea. It is generally uſed when a ſhip firſt begins to advance; or when it is doubtful whether ſhe is in a ſtate of reſt or motion. It is in both ſenſes oppoſed to retreating, or moving with the ſtern foremoſt. See the article STERN-WAY.

HEALFANG, HEALSFANG, or HALSFANG, in ancient cuſtoms, ſignifies *colliſtrigium*, or the puniſhment of the pillory. The word is compounded of two Saxon words; *halp, neck*, and *pangen* "to contain:" *Pœna ſcilicet qua alicui collum ſtringatur*. The healfang, however, cannot ſignify a pillory in the charter of Canutus, De foreſtis, cap. xiv. *Et pro culpa ſolvat regi duos ſolidos, quos Dani vocant* halfehang.

HEALFANG is alſo taken for a pecuniary puniſhment or mulct, to commute for ſtanding in the pillory; and is to be paid either to the king or the chief lord. *Qui falſum teſtimonium dedit, reddat regi vel terræ domino* healfang.

HEALING, in its general ſenſe, includes the whole proceſs of curing or removing a diſorder, and recovering health. In this ſenſe medicine is defined the art of healing. In its more reſtrained ſenſe, as uſed in ſurgery, &c. healing denotes the uniting or conſolidating the lips of a wound or ulcer. The medicines proper for this intention are called *incarnatives, agglutinatives, vulneraries*, &c.

HEALING, in architecture, denotes the covering the roof of a building. The healing is various; as of lead, tiles, ſlate, Horſhamſtone, ſhingles, or reed and ſtraw.

HEALTH, is a right diſpoſition of the body, and of all its parts; conſiſting in a due temperature, a right conformation, juſt connection, and ready and free exerciſe of the ſeveral vital functions.

Health admits of latitude, as not being the ſame in all ſubjects, who may yet be ſaid to enjoy health.

That part of medicine which ſhows the means of preſerving health, is termed *hygieine*. See MEDICINE.

The Greeks and Romans deified Health, repreſenting it under the figure of a woman, whom they ſuppoſed to be the daughter of Æſculapius. We find the name of the goddeſs *Salus*, or Health, on many medals of the Roman emperors, with different inſcriptions; as, SALUS PUBLICA, SALUS REIPUBLICÆ, SALUS AUGUSTI, &c.

Methods of preſerving the HEALTH *of Mariners.* See MARINER.

HEAM, in beaſts, denotes the ſame with *after birth* in women. Thyme, penny-royal, winter-ſavory, and common hore-hound, boiled in white-wine, and given to a mare, are eſteemed good to expel the heam. Dittany, applied in a peſſary, expels the heam, as well as the dead foal, ſo alſo do fennel, hops, ſavin, angelica, &c.

HEARING, the act or faculty of perceiving ſounds. Hearing is reckoned among our external ſenſes. Its organ is the ear, and particularly the auditory nerve diffuſed through the ſame; and its object, certain motions or vibrations of the air. Hence hearing may be more ſcientifically defined, a ſenſation, whereby, from a due motion impreſſed on the fibrillæ of the auditory nerve, and communicated thence to the ſenſory, the mind perceives and gets the idea of ſounds. See ANATOMY, nº 141.

HEARING in different animals. See *COMPARATIVE-Anatomy*, ENTOMOLOGY, and ICHTHYOLOGY.

HEARNE (Thomas), a celebrated antiquarian, eminent for his writings and editions of MSS. His father was pariſh-clerk of Little Waltham in Berkſhire, where he was born in 1680. He had a liberal education by the patronage of a neighbouring gentleman; and even from a boy diſcovered a ſtrong propenſity to the ſtudy of antiquities. He did great ſervices to the Bodleian library, and died in 1735.

HEARSE, among hunters, a hind in the ſecond year of her age. See HUNTING.

HEARSE is the name of a well known carriage, uſed for conveying the dead to the grave. The word is alſo uſed by Shakeſpeare in his Henry VI. for a monument erected over a grave.

HEART, in anatomy, a muſculous part of the animal body, ſituated in the thorax, on the anterior part of the diaphragm, between the two laminæ of the mediaſtinum, wherein the veins all terminate, and from which all the arteries ariſe; and which, by its alternate contraction and dilatation, is the chief inſtrument of the circulation of the blood, and the principle of life. See ANATOMY, nº 121, 122.

Several ingenious perſons have from time to time attempted to make eſtimates of the force of the blood in the heart and arteries; who have as widely differed from each other, as they have from the truth, for want of a ſufficient number of data to argue upon. This ſet the truly ingenious Dr Hales upon making proper experiments, in order to aſcertain the force of the blood in the veins and arteries of ſeveral animals.

If, according to Dr Keil's eſtimate, the left ventricle of a man's heart throws out in each ſyſtole an ounce or 1.638 cubic inches of blood, and the area of the orifice of the aorta be =0.4187, then dividing the former by this, the quotient 3.9 is the length of the cylinder of blood which is formed in paſſing thro' the aorta in each ſyſtole of the ventricle; and in the 75 pulſes of a minute, a cylinder of 292.5 inches in length will paſs: this is at the rate of 1462 feet in an hour. But the ſyſtole of the heart being performed in one third of this time, the velocity of the blood in that inſtant will be thrice as much, viz. at the rate of 4386 feet in an hour, or 73 feet in a minute. And if the ventricle throws out one ounce in a pulſe, then in the 75 pulſes of a minute, the quantity of blood will be equal to 4.4lb. 11oz. and, in 34 minutes, a quantity equal to a middle-ſized man, viz. 158lb. will paſs through the heart. But if, with Dr Harvey and Dr Lower, we ſuppoſe two ounces of blood, that is, 3.236 cubic inches, to be thrown out at each ſyſtole of the ventricle, then the velocity of the blood in entering the orifice of the aorta will be double the former, viz. at the rate of 146 feet in a minute, and a quantity of blood equal to the weight of a man's body will paſs in half the time, viz. 17 minutes.

If we ſuppoſe what is probable, that the blood will riſe $7+\frac{1}{2}$ feet high in a tube fixed to the carotid artery of a man, and that the inward area of the left ventricle of his heart is equal to 15 ſquare inches, theſe multiplied into $7+\frac{1}{2}$ feet, give 1350 cubic inches of blood, which preſſes on that ventricle, when it firſt begins to contract, a weight equal to 15.5 pounds.

What the doctor thus calculates, from ſuppoſition, with regard to mankind, he actually experimented upon horſes, dogs, fallow-does, &c. by fixing tubes in orifices opened in their veins and arteries; by obſerving the ſeveral heights to which the blood roſe in theſe tubes, as they lay on the ground; and by meaſuring the capacities of the ventricles of the heart and orifices of the arteries. And, that the reader may the more readily compare the ſaid eſtimates together, he has given a table of them, ranged in the following order.

The ſeveral animals.		Weight of each.		Height of the blood in the tube from the jugular vein.	Height of the blood in tubes fixed to arteries.		Capacity of the left ventricle of the heart.	Area of the orifice of the aorta.	Velocity of the blood in the aorta.	Quantities of blood equal to the weight of the animal, in what time.	How much in a minute.	Weight of the blood ſuſtained by the left ventricle contracting.	N° of pulſes in a minute.	Area of tranſverſe ſection of deſcending aorta.	Area of the tranſverſe ſection of aſcending aorta.
		Pounds.	Ounces.	Inches.	Feet.	Inches.	Cubic inches.	Square Inches.	Feet and inches in a minute.	Minutes.	Pounds.	Pounds.		Square inches	Square inches.
Man		160		On	7	6	1.659	0.4187	56.55	34.18	4.38	51.5	75		
				ſtrain-			3.318		113.3	17.5	9.36				
Horſe	1ſt.			ing.	8	3									
	2d.				9	8									
	3d.	825		12 52	9	6	10	1.036	86.85	60	13.75	113.22	86	0.677	0.369
Ox		1600					12.5	1.539	76.95	88	18.14		38	0.912	0.84
															right. left.
Sheep		91		$5\frac{1}{1}$ 9	6	$5\frac{1}{3}$	1 85	0.172	174.5	20	4.593	36.56	65	0.094	0.07 0.012
Doe					4	2	9	0.476						0.383	0.246
															right. left.
Dogs	1ſt.	52		0 6	6	8	1.172	0.196	144.77	11.9	4.34	33.61	97	0.106	0.041 0.034
	2d.	24		5 7	2	8	1	0.185	130.9	6.48	3.7			0.102	0.031 0.009
	3d.	18		5	4	8	0.633	0.118	130	7.8	2.3	19.8		0.07	0.022 0.009
	4th.	12	8	4	3	3	0 5	0.101	120	6.7	1.85	11.1		0.061	0.015 0.007

Heart-burn, a diſeaſe uſually called *cardialgia* by phyſicians. In ſurfeits, or upon ſwallowing without due maſtication; when meats are eat tough and fat or with farinaceous ſubſtances unfermented; or when by any accident the ſaliva is vitiated, too ſcanty or not intimately mixed with the food, the fermentation becomes tumultuous, the ſtomach ſwells with air, and this extraordinary commotion being attended with an unuſual heat brings on the uneaſineſs called the *heart-burn*; which is remedied by whatever promotes a greater ſecretion of ſaliva, or helps to mix it with our aliment. The teſtaceous powders, as oyſter-ſhells, crabs-eyes, chalk, &c. are the uſual remedies for the heart-burn.

HEARTH, that part of the pavement of a room on which the fire is immediately placed.

Hearth-Money. See *Chimney-Money.*

HEAT, in phyſiology, has a double meaning; being put either for that peculiar ſenſation which is felt on the approach of burning bodies, or for the cauſe of that ſenſation; in which laſt ſenſe it is ſynonymous with Fire. This mode of ſpeaking, however, is inaccurate, and by confounding the effect with the cauſe, ſometimes produces obſcurity: it were to be wiſhed therefore that the word *heat* was uſed only to denote the effect; and *fire*, or ſome other term, to denote the cauſe of that effect.

The diſputes which formerly were ſo much agitated in the learned world concerning the nature of heat, viz. whether it conſiſted merely in the motion of the terreſtrial particles of bodies, or in that of a ſubtile fluid, are now moſtly ceaſed, and it is almoſt univerſally believed to be the effect of a fluid. Unluckily, however, from the promiſcuous uſe of the words *fire* and *heat*, an opinion ſeems to have gained ground, that there is in nature a fluid eſſentially *hot*; and that wherever the oppoſite ſenſation prevails, the former fluid is in part abſent. Hence have ariſen numberleſs ſpeculations concerning the attraction, abſorption, and capacities of bodies for heat; all of which being built on a falſe principle, have ſerved no other purpoſe but to involve this part of natural philoſophy in obſcurity and confuſion. Under the articles Chemistry, Combustion, Electricity, &c. it is ſo fully ſhown that *heat* properly ſo called is not a fluid, but the *modification* of a fluid, that it is ſuperfluous to ſay any more on the ſubject at preſent. This being admitted, it will evidently follow, that *heat* can neither be abſorbed nor attracted; neither can any body have a greater capacity for it than another, except in proportion to its bulk, which allows a larger quantity of the fluid to enter and to aſſume the particular motion which conſtitutes heat. From ſome of Dr Black's experiments indeed it would appear at firſt view, that heat was *abſorbed*, or *attracted* in the ſtricteſt ſenſe of the word: but this muſt be attributed merely to the transferring of the modification of the fluid from one ſubſtance to another, without regarding whether it is the identical quantity of fluid which acts as heat in one ſubſtance that is transferred to the other, or whether only by ſome unknown means a ſimilar motion is produced in another portion of the ſame. At any rate, however, ſome word muſt be made uſe of to expreſs this operation; and *abſorption* or *attraction* will anſwer the purpoſe as well as any others: but ſtill we ought to remember, that theſe are inaccurate; and when we begin to argue from them as if they fully and exactly determined the mode in which the fluid acts, or rather is acted upon (for both theſe words ſuppoſe heat to be paſſive, and not active), we muſt certainly err. As to the phraſes *capacity for containing heat, abſolute heat*, &c. they are ſtill more inaccurate than the words *abſorption* and *attraction*, and cannot convey any diſtinct idea; whence the ſyſtems founded upon the explanations of theſe terms, aſſumed *gratis dictum* without the leaſt proof, have never been able to ſupport themſelves, but are liable to endleſs and inſuperable objections.

It is by no means indeed eaſy, nay we may boldly ſay that it is abſolutely impoſſible, for human genius to inveſtigate all the phenomena of this ſubtile and inviſible element. All that can be done is, to diſcover a few general rules according to which the fluid acts in certain caſes. From theſe we can only reaſon analogically to caſes where its action is leſs obvious. But we are not to expect that by reaſoning in this manner we can ſolve every phenomenon: nor can it be any recommendation to an hypotheſis, merely that it ſolves *ſome* phenomena, unleſs we were able by its means to ſolve them all; but this no wiſe man will pretend to do, nay, not even to *know* them all. It appears exceedingly erroneous therefore to invent ſolutions of certain phenomena, and then to argue for the truth of the hypotheſis from the facility with which the phenomena are explained by it. The true and proper method of proceeding in this caſe is to lay down certain principles eſtabliſhed from the obvious phenomena of nature, and to reaſon from them fairly as far as we can; but where this ends, our knowledge muſt ſtop, and we cannot by any means proceed farther upon a ſure foundation.

The only general principles as yet certainly eſtabliſhed from obvious phenomena upon this ſubject are the following: 1. Heat and cold are found to expel one another. Hence we ought to conclude, that heat and cold are both *poſitives*; for a negative can neither be expelled nor accumulated. 2. Heat is *viſibly* occaſioned by the rays of the ſun concentrated, and likewiſe by the fluid of electricity concentrated. If *fire*, therefore, properly ſo called, be the cauſe of heat, than which nothing can be more evident to our ſenſes, we are certainly intitled to conclude, that both the light of the ſun and the electric fluid are *elementary fire*. Hence alſo we conclude their identity; for two different ſubſtances cannot by any means produce conſtantly the ſame effect when put in the ſame circumſtances, which both light and electricity do in this caſe, merely by *concentration*, or diſcharging a great quantity of the fluid upon a ſmall portion of any terreſtrial body. 3. Heat expands bodies in every direction: whence we conclude, that the fluid, when producing heat, acts from a centre towards a circumference; and by analogy, that when it produces *cold* it acts from a circumference towards a centre. 4. It appears from undeniable experiments, that heat, ſomehow or other, is the cauſe of fluidity. As the action of the fluid has already been ſhown, when it produces heat, to be from a centre to a circumference, it follows, that when the expanſive action of the fluid is confined within the ſurface of any body, this may be called its *latent* heat; becauſe it extends not beyond the ſurface, and therefore cannot affect the thermometer, or be known to us as heat by the ſenſe of feeling. But when this expanſive action is transferred from the internal parts of the ſubſtance to the ſurface, it then affects the thermometer and the body is ſaid to become *hotter* at the ſame time that it congeals or is ſaid to be *frozen*. This is what ſome philoſophers call the converſion of the *latent* into *ſenſible* heat; others, the alteration of the *capacity*: but whatever term we give to the *effect*, the cauſe muſt remain the ſame, *viz.* the oppoſite actions of the ſame fluid; the expanſive power in ſome caſes counteracting or overcoming the condenſing one, and *vice verſa*. 5. Though ſometimes the expanſive action is ſufficiently ſtrong to produce fluidity *naturally*, and in moſt caſes may be made ſo ſtrong *artificially* as to make bodies fluid, yet in all caſes it is not ſo. A certain degree of expanſive power exiſts in all bodies whatever, and this by philoſophers is called the *ſpecific heat* of the body. 6. Whatever is called the *cooling* of any body is only the diminution of the expanſive action upon its ſurface, or, if we may uſe the expreſſion, on the ſurface of its particles. This is accompliſhed by an oppoſite power or modification of the fluid taking place on the outſide; but when this becomes ſufficiently ſtrong to penetrate the whole ſubſtance, it then expels part of the fluid acting in the oppoſite direction, and then ſome change takes place in the texture of the body. It is, however, impoſſible to ſpeak very perſpicuouſly upon this ſubject, as the ſubtility and inviſibility of the fluid render all reaſonings upon it very precarious. 7. It is altogether impoſſible to calculate the quantity of abſolute heat contained in any ſubſtance, becauſe this depends on the proportion betwixt the quantity of fluid acting expanſively and that acting in the oppoſite direction in the ſame. Theſe two muſt ſome way or other counterbalance each other throughout the whole ſyſtem of nature; and we may ſay with certainty, that any ſubſtance in which the one exiſts without the other, is none of thoſe ſubject to the inveſtigation of our ſenſes, and all ſpeculations concerning it muſt be vain. 8. When the fluid contained in any ſubſtance is vehemently agitated, this naturally produces an expanſion in it; and therefore bodies become hot by violent friction, percuſſion, &c. In theſe caſes, however, we have no right to ſay that the fluid is *expelled*, but only that its mode of action is altered; for this is conſtantly ſufficient to produce heat, and in this indeed the very eſſence of heat conſiſts. 9. When the expanſive action of elementary fire within any ſubſtance becomes greater than is conſiſtent with the coheſion of that ſubſtance, it is diſſipated or reſolved into vapour. This, however, may be done in ſuch a manner that the heat ſtill acts upon the ſeparated parts of the body without ſpending any of its force upon external ſubſtances. Hence vapour continues to exiſt in a temperature much below that in which it was originally produced; nay, will ſometimes be exceſſively cold to the touch, when it really contains as much heat, though in a *latent* ſtate, as before. 10. When this latent heat is transferred to external bodies, the vapour then ceaſes to be vapour, or is *condenſed*, and in ſome caſes returns to its original ſtate; in others, it is productive of light and vehement ſenſible heat:

whence all the phenomena of Distillation, Evaporation, Flame, Ignition, Combustion, &c.

Theſe are the principal facts which can be looked upon as *eſtabliſhed* with regard to *heat* conſidered in a philoſophical view. In common diſcourſe it is always ſpoken of as a certain ſubſtance diſtinct from all others, and may properly enough be reckoned ſo with regard to all the purpoſes of life. In this ſenſe, heat is accumulated by certain bodies in a much greater proportion than others. Dr Franklin made the experiment with pieces of cloth of various colours laid upon ſnow and expoſed to the ſunſhine, and in all caſes found that the pieces dyed with the darkeſt colours ſunk deepeſt in the ſnow. Mr Cavallo examined the matter more accurately; firſt by obſerving the height to which a thermometer with a blackened bulb roſe in compariſon with one of clear glaſs, and then by comparing the heights of different thermometers whoſe bulbs were painted of various colours. Having therefore conſtructed two thermometers whoſe ſcales exactly correſponded with each other, he fixed them both upon the ſame frame, about an inch aſunder, having the balls quite detached from the frame; and in this manner expoſed them to the light of the ſun or of a lamp. When theſe were expoſed to the ſun or kept in the ſhade, with the glaſs of both bulbs clear, they ſhowed preciſely the ſame degree; and the difference between the degree ſhown by the thermometers when expoſed to the ſun and when kept in the ſhade, at about the ſame time of the day, was very trifling.

The ball of one of the thermometers being painted black, and that of the other left clean, they ſhowed different degrees of temperature on being expoſed to the ſun, the difference ſometimes amounting to 10°: but was never conſtant; varying according to the clearneſs of the ſun's light as well as of the air, and likewiſe according to the different degrees of temperature in the atmoſphere.

On keeping the thermometer with the painted ball on the inſide of a window, Mr Cavallo obſerved that ſtrong day-light had an effect in raiſing the mercury as well as the ſun's light. To aſcertain this, he cleaned the bulb of the painted thermometer, and blackened that of the other; but the effect was conſtant, *viz.* the quickſilver in the tube of the thermometer, whoſe ball was painted black, was conſtantly higher than the other whenever they were expoſed to the ſtrong day-light. The difference was commonly about one-third of a degree, but ſometimes it amounted to three-fourths, or even to a whole degree; and the experiment anſwered even when the ſun was hid by clouds, which ſeems to indicate that every degree of light is accompanied with a correſponding one of heat.

By this conſideration Mr Cavallo was induced to try whether, by directing the concentrated light of the moon upon the blackened bulb of a thermometer, it would be raiſed higher than a clean one ſtanding in the ſame. The experiment was ſeveral times tried with a large lens, and afterwards with a burning mirror of 18 inches diameter; yet ſometimes for want of proper means of obſerving the height of the mercury in the tubes of the thermometers, ſometimes for want of a continued clear light of the moon, or in ſhort from ſome unfavourable circumſtance or other, he was never able to make a fair and deciſive trial of this experiment.

Making trial of the heat of a lamp, he found that it alſo had a conſiderable effect. The ball of one being blackened, and both ſet at two inches diſtance from the flame of a lamp, they both roſe from 58 to $65\frac{1}{2}$ deg. and the thermometer which was blackened to $67\frac{1}{2}$. Another time the uncoloured thermometer roſe to $67\frac{3}{4}$ and the coloured one to $68\frac{3}{4}$. From a number of trials it at laſt appeared, that the difference at this diſtance from the lamp amounted generally to about a degree. When the thermometers were removed farther than two inches from the lamp, the difference decreaſed; and at the diſtance of about 14 or 15 inches it vaniſhed entirely.

On this occaſion Mr Cavallo had an opportunity of making a curious obſervation concerning the decreaſe of heat at different diſtances from the centre. "It is mathematically true, that emanations which proceed from a centre, and expand in a ſphere, muſt become more and more rare in proportion to the ſquares of the diſtances from the centre. Thus it is ſaid, that the intenſity of light proceeding from a luminous body at the double, treble, quadruple, &c. diſtance from that body, muſt be reſpectively four, nine, ſixteen, times, &c. leſs denſe. The ſame thing may be ſaid of heat; but with reſpect to the latter, it appeared, that its intenſity did not decreaſe exactly in the duplicate proportion of the diſtances from the flame of the lamp, but ſhowed a very odd irregularity. It ſeemed to decreaſe faſter than the duplicate proportion of the diſtances for the ſpace of two inches and a half or three inches, after which it decreaſed much ſlower; but whether this proceeded from ſome different ſtate of the air's purity at different diſtances from the flame of the lamp, or from the vapours coming from the flame, I cannot take upon me to determine."

Mr Cavallo next made ſome experiments upon thermometers, the balls of which were painted of various colours. His view was to examine with preciſion the degrees of heat imbibed by differently coloured ſubſtances, in order to determine whether they kept any proportion to the ſpaces occupied by the priſmatic colours in the priſmatic ſpectrum, or if they followed any other law. In theſe experiments he met with conſiderable difficulties, chiefly ariſing from the different nature of the colours with which the bulbs were painted. By reaſon of this diverſity the bulbs could not be made equally ſmooth, which occaſioned a conſiderable difference in the effect, as he found by painting two bulbs of thermometers with the ſame colour, only making the one ſmooth and the other rough.

To avoid this inconvenience, he attempted to make thermometers with tubes of differently coloured glaſs; but when a ball was formed with any of theſe, the glaſs of the ball was ſo thin, that it differed very little from that which was entirely colourleſs. He then included the thermometers in boxes, where the rays entered through coloured glaſſes; but here the rays were not only far from being homogeneous, but there was ſuch a difference in the tranſparency of ſome of the coloured glaſſes, that this method, proved alſo ineffectual. The leaſt ambiguous method therefore, was that of painting the balls of the thermometers with water-colours, taking care to lay them on as equally and ſmooth as poſſible. In this manner the experiments were repeated, uſing ſometimes a dozen of thermometers at once, whoſe balls were painted with various colours, and were expoſed to the ſun; but from a vaſt number of experiments, and ſome weeks obſervation, it could only be deduced, that if the colours with which the balls of the thermometers were painted had any conſiderable reſemblance to thoſe of the priſm, thoſe which were neareſt to the violet ſhowed a greater degree of heat than the others; but they were all, even that painted with white lead, in ſome intermediate degree between the blackened thermometer and that which was left quite clear. If the colours had not the proper denſity, the effects were different: thus, a thermometer painted with a light blue ſtood lower than another painted with good carmine.

In the courſe of his thermometrical experiments, Mr Cavallo likewiſe diſcovered a new method of determining the expanſion of mercury by weight, which ſeemed capable of being carried to a greater degree of exactneſs than any other hitherto propoſed. Having firſt blown a ball to a capillary tube, ſuch as are commonly uſed for thermometers, he weighed it, and found the weight when empty to be 79.25 grains; and he obſerves, that in this experiment it is a precaution abſolutely neceſſary to have the glaſs as accurately cleaned as poſſible. Some mercury was then introduced into the ſtem of the thermometer, taking care that none of it entered the ball; and by adapting a ſcale of inches to the tube, obſerved that 4.3 inches of it were filled with the mercury. The thermometer was now weighed again; and from this the weight of the glaſs being ſubtracted, the remainder, *viz.* 0.24. gr. ſhowed the weight of that quantity of quickſilver which filled the 4.3 inches of the tube. Now the ball of the thermometer, and alſo part of the tube, were entirely filled with quickſilver; and in order to find out the weight of the mercury contained in it, the thermometer was weighed for the laſt time; and the weight of the glaſs being ſubtracted from this, the remainder, *viz.* 3205 grains, ſhowed the weight of the whole quantity of quickſilver contained in the thermometer.

By comparing this inſtrument with a graduated thermometer of Fahrenheit, and by applying a ſcale of inches, he found, that 20° on the new thermometer was equal to 1.37 inches. But 0.24 grains was the weight of as much mercury as filled 4.3 inches of the tube. Therefore, by the rule of proportion, it will be found that the weight of as much quickſilver as fills 1.33 inches of the tube, *viz.* the length of 20°, is equal to 0.0742 of a grain nearly, and that the weight of as much quickſilver as fills a length of the tube equivalent to one degree, is equal to 0.00371 grains. Now it is clear, that the weight of the whole quantity of quickſilver contained in the thermometer is to the weight of as much as fills the length of one degree of the tube, as the bulk of the whole quantity of quickſilver in a given degree of heat to the increaſe of bulk that the ſame whole quantity of quickſilver acquires when heated but one degree; *viz.* 32.05 grains is to 0.00371 grains as 1 to 0.0011+. By which experiment it appears, that one degree of Fahrenheit's thermometer increaſes the bulk of mercury not above eleven hundredth thouſandth parts. A ſmall deviation from mathematical exactneſs is indeed produced by the difference of weight between the quickſilver of the tube when firſt weighed and when it is afterwards heated to one degree; but by an eaſy calculation it will be found, that this difference is ſo exceedingly ſmall that it cannot be perceived with our moſt exact inſtruments of either weight or meaſure.

On repeating this experiment with other thermometers, each proceſs varied a little from the other; which irregularity, Mr Cavallo thinks, was certainly owing to the imperfection of his ſcales: but by taking a mean of various experiments, it appears, that one degree of heat, according to Fahrenheit's thermometer, increaſes the bulk of a quantity of quickſilver in the temperature of 50° by about nine parts in 100,000; that is, if the bulk of any quantity of quickſilver in the temperature of 50° be 100,000, it will be 100,009 in the temperature of 51°.

In making experiments of this kind, it is neceſſary to have the bores of the tubes abſolutely cylindrical; and the ſcales ſhould be ſo exact as to turn with the hundredth part of a grain when charged with half an ounce weight.

Heat of Burning Bodies. See COMBUSTION.

Heat of Chemical Mixtures. This is a phenomenon neceſſarily reſulting from the change of form produced in the different ſubſtances which are mixed together; and the manner in which it happens may be eaſily underſtood from the example of oil of vitriol and water. If equal quantities of concentrated vitriolic acid and water are mixed together, a very great degree of heat immediately takes place; inſomuch that if the veſſel which contains the mixture is made of glaſs it will probably break; and after it is cold, the mixture will be found to have ſhrunk in its dimenſions, or will occupy leſs ſpace than the bulk of the water and acid taken ſeparately. In this caſe we know that the water, while in its fluid ſtate, hath as much latent heat as it can contain; *i. e.* the elementary fire within it expands or ſeparates its parts from each other, as much as is conſiſtent with the conſtitution of the body. If any more is added, it cannot be abſorbed, or direct its force upon the particles of the water without raiſing them in vapour: of conſequence, part of this additional expanſive power will be employed in the formation of vapour, and the reſt will be diſcharged upon the neighbouring bodies, *i. e.* will be converted into *ſenſible* heat. The vitriolic acid, in its concentrated ſtate, contains a great quantity of latent heat, which is neceſſary to preſerve its fluidity. But when it is mixed with the fluid water, the latent heat contained in the latter is abundantly ſufficient for both: of conſequence, the great expanſive power in the oil of vitriol itſelf becomes now totally uſeleſs, and therefore exerts its force upon the neighbouring bodies; and when the mixture returns to the original temperature of the oil of vitriol and water, it ſhows a loſs of ſubſtance by its diminution in bulk. This may ſerve to explain all caſes in chemiſtry where heat or cold is produced: and it will generally be found, that where bodies, by being mixed together, produce heat, they ſhrink in their dimenſions; but when they produce cold, they are enlarged.

Methods of Meaſuring Heat. See THERMOMETER.

Expanſion of Metals by Heat. See PYROMETER.

Degrees of Heat which animals are capable of bearing.—The ancients were of opinion, that all countries lying

Heat.

lying within the tropics were uninhabitable by reaſon of their heat: but time has diſcovered their miſtake; and it is now found, that no part of the world is too hot for mankind to live in. The learned profeſſor Boerhaave, in his chemiſtry, relates certain experiment made with great accuracy by the celebrated Fahrenheit, and others, at his deſire, on this ſubject, in a ſugar-baker's-office; where the heat, at the time of making the experiments, was up to 146 degrees of Fahrenheit's thermometer. A ſparrow, ſubjected to the air thus heated, died after breathing very laboriouſly, in leſs than ſeven minutes. A cat reſiſted this great heat ſomewhat above a quarter of an hour; and a dog about 28 minutes, diſcharging before his death a conſiderable quantity of a ruddy coloured foam, and exhaled a ſtench ſo peculiarly offenſive, as to throw one of the aſſiſtants into a fainting fit. This diſſolution of the humours, or great change from a natural ſtate, the profeſſor attributes not to the heat of the ſtove alone, which would not have produced any ſuch effect on the fleſh of a dead animal; but likewiſe to the vital motion, by which a ſtill greater degree of heat, he ſuppoſes, was produced in the fluids circulating through the lungs, in conſequence of which the oils, ſalts, and ſpirits of the animal became ſo highly exalted.

Meſſeurs Du Hamel and Tillet having been ſent into the province of Angoumois, in the years 1760 and 1761, with a view of endeavouring to deſtroy an inſect which conſumed the grain of that province, effected the ſame in the manner related in the Memoirs for 1761, by expoſing the affected corn, with the inſects included in it, in an oven, where the heat was ſufficient to kill them without injuring the grain. This operation was performed at Rochefoucault, in a large public oven, where, for economical views, their firſt ſtep was to aſſure themſelves of the heat remaining in it on the day after bread had been baked in it. This they did, by conveying in a thermometer on the end of a ſhovel, which, on its being withdrawn, indicated a degree of heat conſiderably above that of boiling water: but Mr Tillet, convinced that the thermometer had fallen ſeveral degrees in drawing to the mouth of the oven, and appearing under ſome embarraſſment on that head, a girl, one of the attendants on the oven, offered to enter, and mark with a pencil the height at which the thermometer ſtood within the oven. The girl ſmiled on M. Tillet's appearing to heſitate at this ſtrange propoſition; and entering the oven, with a pencil given her for that purpoſe, marked the thermometer, after ſtaying two or three minutes, ſtanding at 100 degrees of Reaumur's ſcale, or, to make uſe of a ſcale better known in this country, at near 268 degrees of Fahrenheit's. M. Tillet began to expreſs an anxiety for the welfare of his female aſſiſtant, and to preſs her return. This female ſalamander, however, aſſuring him that ſhe felt no inconvenience from her ſituation, remained there 10 minutes longer: that is, near the time when Boerhaave's cat parted with her nine lives under a much leſs degree of heat, when the thermometer ſtanding at 288 degrees, or 76 degrees above that of boiling water, ſhe came out of the oven, her complexion indeed conſiderably heightened, but her reſpiration by no means quick or laborious. After M. Tillet's return to Paris, theſe experiments were repeated by Monſ. Marantin, commiſſaire de guere, at Rochefoucault, an intelligent and accurate obſerver, on a ſecond girl belonging to the oven, who remained in it, without much inconvenience, under the ſame degree of heat, as long as her predeceſſor; and even breathed in the air heated to about 325 degrees for the ſpace of five minutes.

Heat.

M. Tillet endeavoured to clear up the very apparent contrariety between theſe experiments and thoſe made under the direction of Boerhaave, by ſubjecting various animals, under different circumſtances, to great degrees of heat. From his experiments, in ſome of which the animals were ſwaddled with cloths, and were thereby enabled to reſiſt for a much longer time the effects of the extraordinary heat, he infers, that the heat of the air received into the lungs was not, as was ſuppoſed by Boerhaave, the only or principal cauſe of the anxiety, laborious breathing, and death, of the animals on whom his experiments were made; but that the hot air, which had free and immediate acceſs to every part of the ſurface of their bodies, penetrated the ſubſtance on all ſides, and brought on a fever, from whence proceeded all the ſymptoms: on the contrary, the girls at Rochefoucault, having their bodies in great meaſure protected from this action by their clothes, were enabled to breathe the air, thus violently heated, for a long time without great inconvenience. In fact, we ſhould think too, that the bulk of their bodies, though not thought of much conſequence by M. Tillet, appears to have contributed not a little to their ſecurity. In common reſpiration, the blood, in its paſſage through the lungs, is cooled by being brought into contact with the external inſpired air: In the preſent experiments, on the contrary, the veſicles and veſſels of the lungs receiving at each inſpiration an air heated to 300 degrees, muſt have been continually cooled and refreſhed, as well as the ſubcutaneous veſſels, by the ſucceſſive arrival of the whole maſs of blood contained in the interior parts of the body, whoſe heat might be ſuppoſed at the beginning of the experiment not to exceed 100 degrees. Not to mention, that M. Tillet's two girls may not poſſibly have been ſubjected to ſo great a degree of heat as that indicated by the thermometer; which appears to us to have always remained on the ſhovel, in contact with the earth.

Theſe experiments ſoon excited other philoſophers to make ſimilar ones, of which ſome very remarkable ones are thoſe of Dr Dobſon at Liverpool, who gives the following account of them in the Philoſophical Tranſactions, vol. lxv.

"I. The ſweating-room of our public hoſpital at Liverpool, which is nearly a cube of nine feet, lighted from the top, was heated till the quickſilver ſtood at 224° on Fahrenheit's ſcale, nor would the tube of the thermometer indeed admit the heat to be raiſed higher. The thermometer was ſuſpended by a ſtring fixed to the wooden frame of the ſky-light, and hung down about the centre of the room. Myſelf and ſeveral others were at this time incloſed in the ſtove, without experiencing any oppreſſive or painful ſenſation of heat proportioned to the degree pointed out by the thermometer. Every metallic about us ſoon became very hot.

"II. My friend Mr Park, an ingenious ſurgeon of this place, went into the ſtove heated to 202°. After

ter ten minutes, I found the pulſe quickened to 120. And to determine the increaſe of the animal-heat, another thermometer was handed to him, in which the quickſilver already ſtood to 98° ; but it roſe only to 99½, whether the bulb of the thermometer was incloſed in the palms of the hands or received in the mouth (A). The natural ſtate of this gentleman's pulſe is about 65.

"III. Another gentleman went through the ſame experiment in the ſame circumſtances, and with the ſame effects.

"IV. One of the porters to the hoſpital, a healthy young man, and the pulſe 75, was incloſed in the ſtove when the quickſilver ſtood at 210° ; and he remained there with little inconvenience for 20 minutes. The pulſe, now 164, and the animal-heat, determined by another thermometer as in the former experiments, was 101½.

"V. A young gentleman of a delicate and irritable habit, whoſe natural pulſe is about 80, remained in the ſtove ten minutes when heated to 224°. The pulſe roſe to 145, and the animal-heat to 102°. This gentleman, who had been frequently in the ſtove during the courſe of the day, found himſelf feeble, and diſpoſed to break out into ſweats for 24 hours after the experiment.

"VI. Two ſmall tin veſſels, containing each the white of an egg, were put into the ſtove heated to 224°. One of them was placed on a wooden ſeat near the wall, and the other ſuſpended by a ſtring about the middle of the ſtove. After ten minutes, they began to coagulate; but the coagulation was ſenſibly quicker and firmer in that which was ſuſpended, than in that which was placed on the wooden ſeat. The progreſs of the coagulation was as follows; it was firſt formed on the ſides, and gradually extended itſelf; the whole of the bottom was next coagulated; and laſt of all, the middle part of the top.

"VII. Part of the ſhell of an egg was peeled away, leaving only the film which ſurrounds the white; and part of the white being drawn out, the film ſunk ſo as to form a little cup. This cup was filled with ſome of the *albumen ovi*, which was frequently detached as much as poſſible from every thing but the contact of the air and of the film which formed the cup. The lower part of the egg ſtood upon ſome light tow in a common gallipot, and was placed on the wooden ſeat in the ſtove. The quickſilver in the thermometer ſtill continued at 224°. After remaining in the ſtove for an hour, the lower part of the egg which was covered with the ſhell was firmly coagulated, but that which was in the little cup was fluid and tranſparent At the end of another hour it was ſtill fluid, except on the edges where it was thinneſt; and here it was ſtill tranſparent; a ſufficient proof that it was dried not coagulated.

"VIII. A piece of bees-wax, placed in the ſame ſituation with the *albumen ovi* of the preceding experiment, and expoſed to the ſame degree of heat in the ſtove, began to melt in five minutes: another piece ſuſpended by a ſtring, and a third piece put into the tin veſſel and ſuſpended, began likewiſe to liquefy in five minutes."

Even theſe experiments, though more accurate than the former, do not ſhow the utmoſt degrees of heat which the human body is capable of enduring. Some others, ſtill more remarkable (as in them the body was expoſed to the heat without clothes), by Drs Fordyce and Blagden, are alſo recorded in the Philoſophical Tranſactions. They were made in rooms heated by flues in the floor, and by pouring upon it boiling water. There was no chimney in them, nor any vent for the air, excepting through crevices at the door. In the firſt room were placed three thermometers, one in the hotteſt part of it, another in the cooleſt part, and a third on the table, to be uſed occaſionally in the courſe of the experiment. Of theſe experiments, the two following may be taken as a ſpecimen.

"About three hours after breakfaſt, Dr Fordyce having taken off all his clothes, except his ſhirt, and being furniſhed with wooden ſhoes tied on with liſt, went into one of the rooms, where he ſtayed five minutes in a heat of 90°, and begun to ſweat gently. He then entered another room, and ſtood in a part of it heated to 110°. In about half a minute his ſhirt became ſo wet that he was obliged to throw it aſide, and then the water poured down in ſtreams over his whole body. Having remained in this heat for ten minutes, he removed to a part of the room heated to 120° ; and after ſtaying there 20 minutes, found that the thermometer placed under his tongue, and held in his hand, ſtood juſt at 100°, and that his urine was of the ſame temperature. His pulſe had gradually riſen to 145 pulſations in a minute. The external circulation was greatly increaſed, the veins had become very large, and an univerſal redneſs had diffuſed itſelf all over the body, attended with a ſtrong feeling of heat; his reſpiration, however, was little affected. He concluded this experiment by plunging in water heated to 100°; and after being wiped dry, was carried home in a chair; but the circulation did not ſubſide for two hours.

"Dr Blagden took off his coat, waiſtcoat, and ſhirt, and went into one of the rooms, as ſoon as the thermometer had indicated a degree of heat above that of boiling water. The firſt impreſſion of this hot air upon his body was exceedingly diſagreeable, but in a few minutes all his uneaſineſs was removed by the breaking out of a ſweat. At the end of 12 minutes he left the room very much fatigued, but no otherwiſe diſordered. His pulſe beat 136 in a minute, and the thermometer had riſen to 220 degrees.

In others of theſe experiments it was found, that a heat even of 260° of Fahrenheit's thermometer could be ſubmitted to with tolerable eaſe. But it muſt be obſerved, that in theſe great heats every piece of metal they carried about with them became intolerably hot.

(A) The ſcale of the thermometer, which was ſuſpended by the ſtring about the middle of the room, was of metal; this was the only one I could then procure on which the degrees ran ſo high as to give any ſcope to the experiment. The ſcale of the other thermometer, which was employed for aſcertaining the variations in the animal-heat, was of ivory.

hot. Small quantities of water placed in metalline veſſels quickly boiled; but in a common earthen veſſel it required an hour and an half to arrive at a temperature of 140°, nor could it ever be brought near the boiling point. Neither durſt the people, who with impunity breathed the air of this very hot room at 264 degrees, bear to put their fingers into the boiling water, which indicated only a heat of 212°. So far from this they could not bear the touch of quickſilver heated only to 120°, and could not but juſt bear ſpirit of wine at 130°.

Animal-Heat. Of this there are various degrees; ſome animals preſerving a heat of 100° or more in all the different temperatures of the atmoſphere; others keep only a few degrees warmer than the medium which ſurrounds them; and in ſome of the more imperfect animals, the heat is ſcarcely one degree above the air or water in which they live.

The phenomenon of animal-heat hath, from the earlieſt ages, been the ſubject of philoſophical diſcuſſion; and, like moſt other ſubjects of this nature, its cauſe is not yet aſcertained. The beſt treatiſes that have appeared on the ſubject are thoſe of Dr Dugud Leſlie, publiſhed in 1778; and Mr Adair Crawford, in 1779. From the firſt of theſe performances, the following account of the different opinions on this ſubject is extracted.

1
Opinions of the ancients concerning animal heat.

" The ancients poſſeſſed not the requiſites for minutely inveſtigating the ſcience of nature; and, prone to ſuperſtition, attributed every phenomenon which eluded their inveſtigation, to the influence of a ſupernatural power. Hippocrates, the father and founder of medicine, accounted animal heat a myſtery, and beſtowed on it many attributes of the Deity. In treating of that ſubject, he ſays in expreſs terms, " what we call heat, appears to me to be ſomething immortal, which underſtands, ſees, hears, and knows every thing preſent and to come."—Ariſtotle ſeems to have conſidered the ſubject particularly, but nothing is to be met with in his works that can be ſaid to throw light upon it.—Galen tells us that the diſpute between the philoſophers and phyſicians of his time was, " whether animal-heat depended on the motion of the heart and arteries; or whether, as the motion of the heart and arteries was innate, the heat was not alſo innate." Both theſe opinions, however, he rejects; and attempts a ſolution of the queſtion on his favourite ſyſtem, namely, the peripatetic philoſophy: but his leading principles being erroneous, his deductions are of courſe inadmiſſible.

2
Of the moderns.

" To enter into a minute detail of all the opinions offered by the moderns on the cauſe of animal-heat, would far exceed our limits. Moſt of them, however, may be referred to one or other of the three general cauſes of heat, viz. mixture, fermentation, and mechanical means, each of which we ſhall particularly conſider.

" 1. *Chemical mixture.* When chemical philoſophy firſt came into vogue, and prevailed in the theory as well as practice of medicine, almoſt every operation in the animal machine was ſaid to be the effect of ferment or mixture. From obſerving, that on the mixing of certain bodies far below the temperature of the human body, a degree of heat ſometimes riſing to actual inflammation was produced; they, without further inveſtigation, pronounced mixture the ſole cauſe of animal heat. Various, however, were the opinions, not only reſpecting the place where the mixture happened, but alſo concerning the nature of the fluids of which it conſiſted. Van Helmont, Sylvius, and ſeveral others, ſuppoſed that the mixture took place in the inteſtinal tube; and aſcribed it to an effervеſcence between the pancreatic juice and the bile. Others diſcovered acids in one place, and alkalies in another; but the general opinion for near two centuries was, That aceſcent fluids taken in, meeting with others of an alkaline nature already prepared in the body, gave riſe to the degree of heat peculiar to animals. But thoſe who are in the leaſt acquainted with the laws of the animal economy, need not be told that theſe opinions are mere conjectures, founded on facts gratuitouſly aſſumed. No experiments have ſhown either an aceſcency or alkaleſcency in the bile that is ſufficient to unite with the other animal juices, and generate the heat of animals. But though we ſhould admit the ſuppoſition in its full extent, ſtill it would by no means be ſufficient to account for the ſtability of animal heat in different climates and ſeaſons; its equability all over the body when in health; its partial increaſe in topical inflammations: or hardly indeed for any one phenomenon attending its production.

" Since, then, it appears that the fluids ſuppoſed to be mixed, the place in which the mixture is made, and every other circumſtance relating to it, are neither aſcertained nor ſeconded by analogy, none will, we preſume, heſitate to reject every hypotheſis of the cauſe of animal heat founded on the effects of mixture.

" 2. *Fermentation.* When a more accurate and extenſive knowledge of the various operations of nature had convinced phyſiologiſts of the abſurdity of explaining the vital functions of animals, and the ſeveral changes which takes place in the living body by the effect of chemical mixture, fermentation was ſubſtituted in its ſtead. All had obſerved, that fermentation was generally accompanied by heat; and few were ignorant, that that identical proceſs, or one extremely ſimilar to it, was conſtantly going forward in living animals; and it was not without ſome appearance of truth, that phyſiologiſts attributed animal heat to that cauſe.

" Formerly there were various modifications of this opinion; but of late it has been chiefly confined to one ſpecies of fermentation, viz. the putrefactive, which indeed is more conſentaneous to experience and ſound philoſophy. For although animal ſubſtances are either directly or indirectly produced from vegetables, as all animals live on vegetables, or on animals that have lived on them; and though they may be ultimately reſolved into the ſame principles; yet they are certainly combined in a different manner: for they conſtitute compounds, the natures of which are eſſentially different; and the three ſtages of fermentation, the vinous, acetous, and putrid, the laſt is the only one to which they ſhow a tendency. Milk indeed tends to the acetous, and even to the vinous fermentation; but as it can hardly be conſidered as perfectly animalized, it ought not to be conſidered as an exception to the general poſition. And though it be readily admitted, that animal matter is extremely apt to putrefy, and that even in the living body there is a tendency to that proceſs; yet it may be ſhown, that the degree to which it takes place can have little or no ſhare in generating the heat of animals. In the firſt place, the effect of any degree of putrefaction in producing heat, is to this day ſo ill aſcertained, that, with many ingenious philoſophers, it is altogether problematical, whether or not animal ſubſtances, during the putrefactive proceſs, do ever generate heat. Neither M. Beaume, nor Dr Pearſon, who made ſeveral accurate experiments with a view to aſcertain this point, could, by the aſſiſtance of the moſt ſenſible thermometers, diſcover the leaſt difference between the temperance of the putrefying mixtures and the ſurrounding medium; and were the putrefaction of animal ſubſtances readily attended with the generation of heat, we might expect to find it greater in proportion to the bulk of the putrefying maſs. This, however, is not the caſe; for it has often been found, that the largeſt maſſes of animal matter, ſuch as the carcaſe of a large whale, laid out and expoſed to the air in ſuch a putrid condition as to affect all the neighbourhood with an intolerable ſtench, did not to the perſons handling it feel ſenſibly hotter than the circumambient air. But what at once overturns every thing that can be advanced in favour of the generation of animal heat on the principles of putrefaction is, that heat is ſo far more conſiderable in a living than in a dead body; and no rational phyſiologiſt will deny, that the putrid fermentation is going forward more rapidly in the latter than in the former.

“ 3. *The mechanical generation of heat.* This opinion firſt took its riſe from an obſervation, that animal heat generally keeps pace with the ſtate of the circulation: while the action of the heart and arteries continues unimpaired, a high degree of animal heat is produced; but when that action becomes more languid, the heat of the animal is diminiſhed alſo. This, till very lately, was the favourite opinion of phyſicians, and was introduced immediately after Harvey had diſcovered the circulation of the blood, and indeed ſeems to be ſupported by many ſtriking facts. Phyſiologiſts looked upon it as a matter almoſt capable of mathematical demonſtration; yet they could not agree whether the heat of animals is occaſioned by the friction of the blood againſt the veſſels which contain it, or by the internal friction and agitation of the particles among one another. Various hypotheſes accordingly were framed, and many ingenious arguments brought in ſupport of them: but all ſuppoſitions of the mechanical kind are overthrown by ſome thermometrical obſervations of De Haen and others, from which it appeared, that the heat of the body was ſometimes greater than is uſual with healthy people, at the time the perſon was juſt expiring, when the action of the veſſels was very weak; nay, even after he was dead, when it had entirely ceaſed. The abovementioned phyſician relates two very remarkable caſes of this kind. In the one, he found that the temperature of his patient, which during the courſe of an inflammatory fever had never exceeded 103 degrees, at the time he expired, and for two minutes after, ſtood at 106. From the other it appeared, that the heat of a perſon who was dying of a lingering diſtemper, roſe in the laſt agony from 100 to 101, and continued there ſtationary for two hours; and, even at the expiration of 15 hours, had only fallen to 85°, though the ſurrounding medium did not exceed 60°. The example alſo of thoſe who are ſuffocated by fixed air, entirely overturn not only the mechanical ſyſtem, but almoſt every other which hath yet appeared on the ſubject. [See the article Blood, nº 31.]

3
Dr Cullen's opinion with objections.

“ One or other of the abovementioned hypotheſes continued to be adopted by phyſicians, till Dr Cullen attempted a ſolution on a new ſet of principles; but, attentive to the diffidence with which novel opinions ought to be broached, he delivered his as little more than a mere conjecture. ‘ May it not (ſays he) be ſuppoſed, that there is ſome circumſtance in the vital principle of animals, which is in common to thoſe of the ſame claſs, and of like economy; and which determines the effect of motion upon the vital principle to be the ſame, though the motion acting upon it may be in different circumſtances?’——The doctor was driven to this ſuppoſition from the difficulty he found in explaining how ſo many animals of a different age, ſize, and temperament, ſhould poſſeſs very nearly the ſame degree of heat; and in which it is impoſſible to ſhow, that the motion of the blood in all its circumſtances is exactly the ſame; or that in the different animals in which the degree of heat is conſiderably different, the motion of the circulating maſs is in each correſpondent to the difference of temperature. But, granting that the degree of heat does not always obtain in an exact ratio with the motion of the blood, and that it is an inſuperable objection to its mechanical generation; yet there appear no plauſible grounds for ſuppoſing that the effect of motion may be the ſame, while the motion acting upon it is in different circumſtances. By this Dr Cullen means, that the different temperature of different animals is owing to a difference of the vital principle, inſomuch that the velocity of the blood may be the ſame in a frog as in a man; and yet, in conſequence of the different vital principle, the heat produced may be different. The facts upon which he ſeems to lay the greateſt ſtreſs are, That neither where the ſurrounding medium conſiderably ſurpaſſes the temperature of the living body, nor where it is far below it, is there any ſenſible change in the heat of animals. Theſe, and ſome ſimilar facts, in appearance countenance his hypotheſis; yet we have no ſolid reaſon for imagining the principle of life to be different in different animals. And how are we to conceive, that the ſame degree of motion ſhould in one claſs of animals always produce a certain degree of heat, and in another claſs as regularly a different one? A propoſition of ſuch a nature ſhould, no doubt, require the moſt obvious facts and concluſive arguments to eſtabliſh it; but, in the preſent inſtance, we do not perceive any probable reaſon, even from analogy. Beſides, to ſay that the principle of life can generate heat or cold, independent of chemical and mechanical means, is contrary to experience, and ſeems in itſelf abſurd.

Inſtit. of Medicine.

“ In the 66th volume of the Philoſophical Tranſactions, Dr Hunter, after reciting ſome experiments concerning animal heat, aſſerts, That certain animals entirely deſtitute of nerves, are endowed with a power of generating their own heat; and this he brings as an *argumentum crucis* againſt thoſe who account the nervous ſyſtem the ſeat of animal-heat. If this is really a fact, it muſt, no doubt, have all the weight he aſcribes to it; but it is plain that no ſtreſs can be laid upon it, unleſs it was better aſcertained, which it is evident it can never be. For though we can poſitively aſſert that nerves exiſt where we ſee them, yet we cannot affirm with equal certainty that they do not alſo exiſt where we are not able to diſcover them. For all anatomiſts allow, that there are thouſands of nervous filaments ſo finely interwoven into the compoſition of the more perfect animals of every ſize, that they elude not only the knife and naked eye, but even the beſt optical inſtruments hitherto invented. Since then we admit the preſence of nerves in one tribe of animals, though we can only perceive them in their effects; what ſolid reaſon have we to deny them in another, in which we have the very ſame evidence, viz. certain indications of ſenſe and motion?

4 Dr Black's opinion.

"Another theory, and perhaps the beſt ſupported which hath yet appeared upon the ſubject, is that of Dr Black. That excellent chemiſt having obſerved, that not only breathing animals are of all others the warmeſt, but alſo that there ſubſiſts ſuch a cloſe and ſtriking connection between the ſtate of reſpiration and the degree of heat in animals, that they appear be in an exact proportion to one another, was led to believe, that animal-heat depends on the ſtate of reſpiration; that it is all generated in the lungs by the action of the air upon the principle of inflammability, in a manner little diſſimilar to what he ſuppoſed to occur in actual inflammation; and that it is thence diffuſed by means of the circulation over the reſt of the vital ſyſtem.

"This opinion is ſupported by many forcible arguments. 1. It is pretty generally known to naturaliſts, that a quantity of mephitic phlogiſticated air is conſtantly exhaling from the lungs of living animals.—Since, therefore, atmoſpherical air, by paſſing through the lungs, acquires the very ſame properties as by paſſing through burning fuel, or by being expoſed to any other proceſs of phlogiſtication, it is obvious, that the change which the common air undergoes in both caſes muſt be attributed to one and the ſame cauſe, viz. its combination with phlogiſton. 2. It has likewiſe been urged in favour of the ſame hypotheſis, that the celerity with which the principle of inflammability is ſeparated in reſpiration, is very cloſely connected with the degree of heat peculiar to each animal. Thus, man, birds, and quadrupeds, vitiate air very faſt; ſerpents, and all the amphibious kind, very ſlowly; and the latter are of a temperature inferior to the former, and breath leſs frequently. 3. The moſt cogent arguments that have been brought in ſupport of this opinion are, that no heat is generated till the function of reſpiration is eſtabliſhed; and that the fœtus *in utero* derives all its heat from the mother."

Upon this theory our author makes the following obſervations, which we ſhall give in his own words.

5 Objections to it,

"Theſe arguments may, perhaps, on a ſuperficial view of the queſtion, appear concluſive; but a ſound reaſoner, who ſhall coolly and impartially weigh every circumſtance, will, I am confident, allow that they only afford a very ambiguous and imperfect evidence of the doctrine they are meant to eſtabliſh; and the ſubſequent animadverſion on Dr Black's theory at large, will, it is hoped, ſuffice to ſhow, that it is not only founded on dubious and controvertible principles, but that it is, in every point of light, clogged with unſurmountable difficulties.

"I. Many and various are the proofs which evince the improbability of the lungs being the ſource or elaboratory of animal-heat: for, though it be granted, that there ſubſiſts a very ſtriking connection between the ſtate of reſpiration and the degree of heat in animals, and that they are even in proportion to one another; yet it by no means enſues, that the former is poſitively the cauſe of the latter. For, were that really the caſe, it is obvious, that thoſe animals which are deſtitute of the organs of reſpiration would generate no heat. That, however, is not true in fact: for thoſe fiſhes which are even deſtitute of gills, appear from various experiments to be warmer than the ordinary temperature of the element in which they live; an irrefragable proof that the function of reſpiration is not abſolutely neceſſary to the production of heat in animals.

"II. If the heat of living animals be generated ſolely in the lungs, two things neceſſarily follow; the firſt, That it can only be communicated to the other parts of the body, through the channel of the arterial ſyſtem; the ſecond, That the heat muſt decreaſe as it recedes from its ſuppoſed centre. And a clear and ſatisfactory evidence of both theſe points will, no doubt, be deemed requiſite to render Dr Black's opinion in any degree probable. So far, however, are we from meeting with thoſe poſitive and convincing proofs which we had reaſon to expect, that we are not preſented with a ſingle plauſible argument in favour of either of the points. On the contrary, it is more conformable to facts, that the venal blood is, if not warmer, at leaſt as warm as the arterial. Dr Stevenſon, an ingenious and accurate phyſiologiſt, with a view to aſcertain this matter, laid bare the jugular vein and carotid artery of a calf, and then tied and cut them off at once, in order to let equal quantities of blood flow, in a given time, into veſſels of an equal capacity, in each of which he had placed a well-adjuſted thermometer; the reſult of the experiment was, that the thermometer immerſed in the venous blood roſe ſeveral degrees above that place in the arterial. But though it is probable that there is not ſuch a difference as that experiment ſeems to make, yet ſeveral reaſons incline me to think, that the venous blood, inſtead of being colder, as Dr Black maintains, is in fact, ſomewhat warmer than the arterial; and what entirely overturns his opinion is, that no experiment, though many have been made, has ever ſhown that the temperature of the blood is higher in the left ventricle of the heart than in the right, which muſt neceſſarily be the caſe, were all the heat of the animal body generated in the lungs.

"III. Having thus rendered it improbable that the generation of animal-heat ſhould be entirely confined to the lungs, we ſhall venture to ſtep farther, and endeavour to ſhow, that the vital fluid, ſo far from acquiring all its heat in the pulmonary ſyſtem, communicates no inconſiderable portion of what it had received in the courſe of the circulation to the air alternately

ternately entering into that organ and iſſuing from it. Various are the arguments which tend to evince this opinion. Were the blood heated in the lungs, we ſhould certainly need leſs of their function in a warm than in a cold atmoſphere: but we are taught by experience, that when the air is extremely hot, and we wiſh to be cooled, we breathe full and quick; and that when it is intenſely cold, our reſpiration is ſlow and languid; which, were the blood heated in the lungs by the action of the air upon it, ſurely ſhould not be the caſe. It is therefore more conſonant with reaſon and experience, that the air which we inſpire, by carrying off a quantity of evolved phlogiſton from the lungs rather contributes to diminiſh than increaſe the heat of breathing animals. Reſpiration, for this reaſon, has been very properly compared, by an ingenious phyſiologiſt, Dr Duncan of Edinburgh, to the blowing of bellows on a hot body. In both caſes a conſiderable degree of heat is communicated to the air: but in neither can the air be ſaid to generate any heat; for if it did, the heat of breathing animals ſhould increaſe in proportion to the quantity of air inhaled, and a piece of inert matter heated to a certain degree ſhould become hotter by ventilation.

"IV. The fœtus *in utero*, according to Dr Black's hypotheſis, generates no heat. The arguments by which he ſupports that poſition, how ingenious ſoever they may be, ſeem not ſufficiently cogent to produce conviction; and as the queſtion from its nature hardly admits of any direct experiment, our reaſoning upon it muſt neceſſarily be analogical. Hence ariſes our embarraſſment; for, as the diſcovering of analogies depends on the quickneſs and fertility of fancy, and the truth of all analogical ratiocination on the acuteneſs and nicety of judgment, two powers of the ſoul ſeldom united in an eminent degree, we cannot wonder that arguments of this kind, which to one man ſeem unanſwerable, ſhould to another appear futile.

"The only plauſible objection to the generation of heat in the fœtus, is, the ſuppoſition that it would in a ſhort time accumulate in ſuch a manner as to become incompatible with life.

"This argument, however, is more ſpecious than ſolid; for, granting that the circulation which is carried on between the fœtus and the mother, tranſmits very nearly the temperature of her blood, that by no means entirely ſuperſedes the neceſſity of heat being generated in it. Various reaſons lead to this opinion.—It is an axiom, that heat decreaſes as it recedes from the ſource from which it ſprang. Now, if we admit for a moment Dr Black's opinion, and believe the heat of animals to be generated ſolely in the lungs, is it not obvious, that before it reaches the uterus, paſſes through the very minute tubes by which that organ is connected to the placenta, circulates through the umbilical veſſels, and pervades the extreme parts of the fœtus, it muſt be too much diminiſhed to ſupport that equilibrium which obtains in very part of the living ſyſtem. Beſides, as the fœtus *in utero* may properly enough be accounted a part of the mother, the ſame objections that are brought againſt the generation of heat in it would hold equally good againſt the production of heat in any part or organ of her body, except the lungs. But ſuch a multitude of accurate thermometrical obſervations have evinced the partial increaſe of heat in local inflammations, that no room is left to doubt, that in every individual part of the vital frame heat is generated; and if the fœtus be, from any cauſe whatever, liable to topical inflammation, a thing which no phyſiologiſt has ever pretended to deny, what ſhadow of reaſon is there for doubting that ſuch affections are accompanied with the ſame effects before as after birth, and conſequently with a partial increaſe of heat?"

6. Dr Dugud's theory.

Our author having now, as he ſuppoſes, refuted the opinions of others, after ſhowing that heat, though *generated*, cannot *accumulate* in the fœtus, proceeds to lay down his own theory, which depends on the following principles.

1. That the blood does contain phlogiſton.

2. That this phlogiſton is evolved, extricated, or brought into a ſtate of activity and motion by the action of the blood-veſſels to which it is ſubjected in the courſe of circulation.

3. That the evolution of phlogiſton is a cauſe which throughout nature produces heat, whether that heat be apparently excited by mixture, fermentation, percuſſion, friction, inflammation, ignition, or any ſimilar cauſe.

4. That this heat, which muſt be produced in conſequence of the evolution of the phlogiſton from the blood of different animals, is in all probability equal to the higheſt degree of heat which theſe animals in any caſe poſſeſs (B).

7. Objections to it.

The firſt and ſecond of theſe propoſitions will readily be granted: but the third is liable to a very great objection, namely, that from putrefying bodies, phlogiſton is evolved in quantity ſufficient to reduce to their metallic form the calces of ſome metals expoſed to the vapour, as Dr Dugud hath acknowledged; yet he himſelf affirms, that no ſenſible heat is produced by putrefying animal ſubſtances. To this he is obliged to reply, that phlogiſton is extricated more ſlowly from mixtures undergoing the putrid fermentation, than from ſuch as are undergoing the vinous and acetous ones; and that the volatile alkali produced from putrefying ſubſtances likewiſe hinders the action of the phlogiſton. But the firſt part of this anſwer is not proved, and is what he himſelf calls only a *probable conjecture*. Neither doth the ſecond appear to be well founded: for putrefying ſubſtances, urine excepted, afford but little volatile alkali; and even putrid urine itſelf, which affords ſuch a large portion, is not colder than other putrid matters.

It is however needleſs to inſiſt farther on this theory, ſince his fundamental principle, namely, That the venous blood is warmer than the arterial, hath been ſhown to be falſe by Mr Adair Crawford, of whoſe hypotheſis we muſt now give an account.

8 Mr Crawford's theory.

This gentleman, who, in his general doctrine of heat, ſeems to agree with Dr Irvin of Glaſgow, begins with an

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(B) Theſe theories, inſerted in the laſt edition of this work, we thought it proper to retain, as there ſeems ſtill a *poſſibility* of the phlogiſtic doctrine regaining its ground, though now threatened with being expelled from the ſyſtem of nature. A particular account of the diſpute concerning PHLOGISTON is given under that article.

an explanation of his terms. The words *heat* and *fire*, he tells us, are ambiguous. *Heat* in common language has a double ſignification. It is uſed indiſcriminately to expreſs a ſenſation of the mind, and an unknown principle, whether we call it a *quality* or a *ſubſtance*, which is the exciting cauſe of that ſenſation. The latter, he, with Dr Irvin, calls *abſolute heat*; the former, *ſenſible heat*. The following are the general facts upon which his experiments are founded.

1. Heat is contained in great quantities in all bodies when at the common temperature of the atmoſphere.

2. Heat has a conſtant tendency to diffuſe itſelf over all bodies, till they are brought to the ſame degree of ſenſible heat.

3. If the parts of the ſame homogeneous body have the ſame degree of ſenſible heat, the quantities of abſolute heat will be proportionable to the bulk or quantity of matter. Thus the quantity of abſolute heat contained in two pounds of water, muſt be conceived to be double of that which is contained in one pound, when at the ſame temperature.

4. The mercurial thermometer is an accurate meaſure of the comparative quantities of abſolute heat which are communicated to the ſame homogeneous bodies or ſeparated from them, as long as ſuch bodies continue in the ſame form. If therefore the ſenſible heat of a body, as meaſured by the mercurial thermometer, were to be diminiſhed the one half, or the one third, or in any given proportion, the abſolute heat would be diminiſhed in the ſame proportion.

5. The comparative quantities of abſolute heat which are communicated to different bodies, or ſeparated from them, cannot be determined in a direct manner by the thermometer. Thus, if the temperature of a pound of mercury be raiſed one degree, and that of a pound of water one degree, as indicated by the thermometer, it does not by any means follow, that equal quantities of abſolute heat have been communicated to the water and the mercury. [See HEAT and THERMOMETER.]—If a pint of mercury at 100° be mixed with an equal bulk of water at 50°, the change produced in the heat of the mercury will be to that produced in the water as three to two: from which it may be inferred, that the abſolute heat of a pint of mercury is to that of an equal bulk of water as two to three; or, in other words, that the comparative quantities of their abſolute heats are reciprocally proportionable to the changes which are produced in their ſenſible heats, when they are mixed together at different temperatures. This rule, however, does not apply to thoſe mixtures which generate ſenſible heat or cold by chemical action.

From the above poſition, ſays Mr Crawford, it follows, that equal weight of heterogeneous ſubſtances, as air and water, having the ſame temperature, may contain unequal quantities of abſolute heat. There muſt, therefore, be certain eſſential differences in the nature of bodies, in conſequence of which ſome have the power of collecting and retaining the element of fire in greater quantities than others, and theſe differences he calls throughout his treatiſe the *capacities* of bodies for containing heat.

Having premiſed theſe general facts, our author gives an account of a number of experiments made, in order to aſcertain the quantity of abſolute heat contained in different bodies. Theſe experiments were made by mixing the bodies to be examined with water, heated to different degrees; and by the temperature of the mixture, he found the proportion of the capacity of the bodies for containing heat, to water, and, of conſequence, to one another. Thus he found the capacity of wheat for containing heat to be to that of water as 1 to 2.9; and, of conſequence, the abſolute heats of the two ſubſtances to be in the ſame proportion. The abſolute heat of oats to that of water he found as 1 to $2\frac{1}{3}$; of barley, as 1 to 2.4; of beans, as 1 to 1.6; of fleſh, as 1 to 1.3; of milk, as 1 to 1.1; and of a mixture of venous and arterial blood from a ſheep, as 25.4 to 24.4. By other experiments he determined, that the abſolute heat of venous blood was to that of water only as 100 to 112, whereas the abſolute heat of arterial blood was to that of water as 100 to 97.08.

By experiments made with air of different kinds contained in bladders, and immerſed in water, he found that the abſolute heat of atmoſpherical air was exceedingly great, being to that of water as 18.6 to 1; that of dephlogiſticated air was ſtill greater, being to the heat of common atmoſpherical air as 4.6 to 1. The heat of phlogiſticated and fixed air was much leſs; that of the latter, particularly, being to the heat of atmoſpherical air only as 1 to 67.

From other experiments made on metals, Mr Crawford concludes, that the abſolute heat of tin, in its metallic ſtate, is to that of water as 1 to 14.7; but the heat of calcined tin is to that of water as 1 to 10.4. In like manner, the heat of iron was to that of water only as 1 to 8; but that of the calx of iron was to the heat of water as 1 to 3.1, &c. And from theſe experiments he is of opinion, that the more phlogiſton that is added to any body, the leſs is its capacity for containing heat.

From theſe experiments our author deduces the following theory of animal heat.—"It has been proved, that the air, which is exſpired from the lungs of animals, contains leſs abſolute heat than that which is inhaled in inſpiration. It has been ſhown, particularly, that in the proceſs of reſpiration, atmoſpherical air is converted into fixed air; and that the abſolute heat of the former is to that of the latter as 67 to 1.

"Since therefore the fixed air which is exhaled by exſpiration is found to contain only the one ſixty-ſeventh part of the heat which was contained in the atmoſpherical air previous to inſpiration, it follows, that the latter muſt neceſſarily depoſit a very great proportion of its abſolute heat in the lungs. It has moreover been ſhown, that the abſolute heat of florid arterial blood is to that of venous as $11\frac{1}{2}$ to 10. And hence, as the blood, which is returned by the pulmonary vein to the heart, has the quantity of its abſolute heat increaſed, it is evident that it muſt have acquired this heat in its paſſage through the lungs. We may conclude, therefore, that in the proceſs of reſpiration, a quantity of abſolute heat is ſeparated from the air and abſorbed by the blood.

"That heat is ſeparated from the air in reſpiration, is farther confirmed by the experiment with phlogiſticated air; from which, compared with Dr Prieſtley's diſcoveries, it is manifeſt, that the power of any ſpecies of air in ſupporting animal life, is nearly in proportion to the quantity of abſolute heat which it contains, and is conſequently proportionable to the quantity which it is capable of depoſiting in the lungs.

"The truth of this concluſion will perhaps appear in a clearer light from the following calculation, by which we may form ſome idea of the quantity of heat yielded by atmoſpherical air when it is converted into fixed air, and alſo of that which is abſorbed during the converſion of venous into arterial blood.

"We have ſeen that the ſame heat which raiſes atmoſpherical air one degree, will raiſe fixed air nearly 67 degrees, and conſequently that the ſame heat which raiſes atmoſpherical air any given number of degrees, will raiſe fixed air the ſame number of degees multiplied by 67. In the Peterſburgh experiment of freezing quickſilver, the heat was diminiſhed 200 degrees below the common temperature of the atmoſphere. We are therefore certain, that atmoſpherical air, when at the common temperature of the atmoſphere, contains at leaſt 200 degrees of heat. Hence, if a certain quantity of atmoſpherical air, not in contact with any body that would immediately carry off the heat, ſhould ſuddenly be converted into fixed air, the heat which was contained in the former would raiſe the latter 200 degrees multiplied by 67, or 13400 degrees. And the heat of red-hot iron being 1050, it follows that the quantity of heat, which is yielded by atmoſpherical air when it is converted into fixed air is ſuch (if it were not diſſipated) as would raiſe the air ſo changed to more than 12 times the heat of red-hot iron.

"If therefore the abſolute heat which is diſengaged from the air in reſpiration, were not abſorbed by the blood, a very great degree of ſenſible heat would be produced in the lungs.

"Again, it has been proved, that the ſame heat which raiſes venous blood 115 degrees, will raiſe arterial only 100 degrees; and conſequently, that the ſame heat which raiſes venous blood any given number of degrees, will raiſe arterial a leſs number in the proportion of 100 to 115, or 20 to 23. But we know that venous blood contains at leaſt 230 degrees of heat. Hence, if a certain quantity of venous blood, not in contact with any body that would immediately ſupply it with heat, ſhould ſuddenly be converted into arterial, the heat which was contained in the former would raiſe the latter only $\frac{20}{23}$ or 230 degrees, or 200 degrees; and conſequently the ſenſible heat would ſuffer a diminution equal to the difference between 230 and 200, or 30 degrees. But the common temperature of blood is 96: when therefore, venous blood is converted into arterial in the lungs, if it were not ſupplied by the air with a quantity of heat proportionable to the change which it undergoes, its ſenſible heat would be diminiſhed 30 degrees, or it would fall from 96 to 66.

"That a quantity of heat is detached from the air, and communicated to the blood, in reſpiration, is moreover ſupported by the experiments with metals and their calces; from which it appears, that when bodies are joined to phlogiſton, they loſe a portion of their abſolute heat; and that, when the phlogiſton is again diſengaged, they reabſorb an equal portion of heat from the ſurrounding bodies.

"Now it has been demonſtrated by Dr Prieſtley, that in reſpiration, phlogiſton is ſeparated from the blood, and combined with the air. During this proceſs, therefore, a quantity of abſolute heat muſt neceſſarily be diſengaged from the air by the action of the phlogiſton; the blood, at the ſame moment, being left at liberty to unite with that portion of heat which the air had depoſited.

"And hence animal heat ſeems to depend upon a proceſs ſimilar to a chemical elective attraction. The air is received into the lungs, containing a great quantity of abſolute heat. The blood is returned from the extremities, highly impregnated with phlogiſton. The attraction of the air to the phlogiſton is greater than that of the blood. The principle will, therefore, leave the blood to combine with the air. By the addition of the phlogiſton, the air is obliged to depoſit a part of its abſolute heat; and as the capacity of the blood is at the ſame moment increaſed by the ſeparation of the phlogiſton, it will inſtantly unite with that portion of heat which had been detached from the air.

"We learn from Dr Prieſtley's experiments with reſpect to reſpiration, that arterial blood has a ſtrong attraction to phlogiſton: it will conſequently, during the circulation, imbibe this principle from thoſe parts which retains it with leaſt force, or from the putreſcent parts of the ſyſtem; and hence the venous blood, when it returns to the lungs, is found to be highly impregnated with phlogiſton. By this impregnation, its capacity for containing heat is diminiſhed. In proportion, therefore, as the blood, which had been dephlogiſticated by the proceſs of reſpiration, becomes again combined with phlogiſton in the courſe of the circulation, it will gradually give out that heat which it had received in the lungs, and diffuſe it over the whole ſyſtem.

"Thus it appears, that, in reſpiration, the blood is continually diſcharging phlogiſton and abſorbing heat; and that, in the courſe of circulation, it is continually imbibing phlogſton and emitting heat.

"It may be proper to add, that as the blood, by its impregnation with phlogiſton, has its capacity for containing heat diminiſhed; ſo, on the contrary, thoſe parts of the ſyſtem from which it receives this principle, will have their capacity for containing heat increaſed, and will conſequently abſorb heat.

"Now if the changes in the capacities, and the quantities of matter changed in a given time, were ſuch that the whole of the abſolute heat ſeparated from the blood were abſorbed, it is manifeſt that no part of the heat which is received in the lungs would become ſenſible in the courſe of the circulation.

"That this, however, is not the caſe, will, I think, be evident from the following conſiderations:

"We know that ſenſible heat is produced by the circulation of the blood; and we have proved by experiment, that a quantity of abſolute heat is communicated to that fluid in the lungs, and is again diſengaged from it in its progreſs through the ſyſtem. If, therefore, the whole of the abſolute heat, which is ſeparated from the blood, were abſorbed by thoſe parts of the ſyſtem from which it receives the phlogiſton, it would be neceſſary to have recourſe to ſome other cauſe, to account for the ſenſible heat which is produced in the circulation. But by the rules of philoſophiſing, we are to admit no more cauſes of natural things than ſuch as are both true and ſufficient to explain the appearances; for nature delights in ſimplicity, and affects not the pomp of ſuperfluous cauſes.

We may, therefore, ſafely conclude, that the abſolute heat which is ſeparated from the air in reſpiration, and abſorbed by the blood, is the true cauſe of animal heat.

“ It muſt nevertheleſs be granted, that theſe parts of the ſyſtem which communicate phlogiſton to the blood, will have their capacity for containing heat increaſed; and therefore, that a part of the abſolute heat which is ſeparated from the blood will be abſorbed.

“ But from the quantity of heat, which becomes ſenſible in the courſe of the circulation, it is manifeſt that the portion of heat which is thus abſorbed is very inconſiderable.

“ It appears therefore, that the blood, in its progreſs through the ſyſtem, gives out the heat which it had received from the air in the lungs; a ſmall portion of this heat is abſorbed by thoſe particles which impart the phlogiſton to the blood; the reſt becomes redundant, or is converted into moving and ſenſible heat.”

9 The ſubject ſtill uncertain. Mr Crawford's theory, which doth not eſſentially differ from Dr Black's, ſeems to be the beſt that hath yet appeared. There is however, one difficulty which ſeems common to them all, and which, even on Mr Crawford's principles, ſeems not to admit of ſolution. If animal heat entirely depends on ſomething peculiar to a living body, why doth it ſometimes continue after life hath ceaſed? If heat depends on the evolution of phlogiſton by the action of the blood-veſſels, according to Dr Dugud, why ſhould it remain when theſe veſſels ceaſe to act, as, according to Dr Dugud himſelf, it ſometimes doth? If, according to Mr Crawford, it is every moment attracted from the air, why is it not always in proportion to the reſpiration? Or, if fixed air contains ſuch a ſmall proportion of abſolute heat as, by Mr Crawford's experiments, it ſeems to do, why doth it impart ſuch a ſtrong and laſting degree of heat to the bodies of thoſe who are killed by it? See Blood, nº 31.

Other objections have been made by Mr Pearſon, which are related in the Medical Journal. They are founded on ſome appearances found on the diſſection of morbid bodies; where it has been found that the pulmonary artery, and even the lungs themſelves, have been totally deſtroyed by diſeaſe, and yet the perſon has ſurvived for ſome time. In theſe caſes, however, it is probable, that the blood had ſtill an opportunity of abſorbing the vital principle from the air, which might make thoſe produce heat alſo by ſome mechaniſm unknown to us. The whole of Dr Crawford's doctrine of latent heat has alſo been attacked in a Treatiſe by Mr Leopold Vacca Berlinghieri. His objections are derived from the calculations of Dr Crawford himſelf; but our limits will not admit of our entering into this diſpute.

Internal Heat *of the Earth.* That there is a very conſiderable degree of heat always felt in digging to great depths in the earth, is agreed upon by all naturaliſts: but the quantity of this heat hath ſeldom been meaſured in any part; much leſs is it known, whether in digging to an equal depth in different parts of the earth, the heat is found always the ſame. In digging mines, wells, &c. they find that at a little depth below the ſurface it feels cold. A little lower it is colder ſtill, as being beyond any immediate influence of the ſun's rays; inſomuch that water will freeze almoſt at any ſeaſon of the year; but when we go to the depth of 40 or 50 feet, it begins to grow warm, ſo that no ice can bear it; and then the deeper we go, ſtill the greater the heat, until at laſt reſpiration grows difficult, and the candles go out.

This heat of the earth hath been variouſly explained. Some have had recourſe to an immenſe body of fire lodged in the centre of the earth, which they conſider as a central ſun, and the great principle of the generation, vegetation, nutrition, &c. of foſſil and vegetable bodies. But Mr Boyle, who had been at the bottom of ſome mines himſelf, ſuſpects that this degree of heat, at leaſt in ſome of them, may ariſe from the peculiar nature of the minerals generated therein. To confirm this, he inſtances a mineral of a vitriolic kind, dug up in large quantities in many parts of England, which by the bare effuſion of common water will grow ſo hot that it will almoſt take fire.—Theſe hypotheſes are liable to the following objections. 1. If there is within the earth a body of actual fire it ſeems difficult to ſhow why that fire ſhould not conſume and moulder away the outer ſhell of earth, till either the earth was totally deſtroyed, or the fire extinguſhed. 2. If the internal heat of the earth is owing to the action of water upon mineral ſubſtances, that action through time muſt have ceaſed, and the heat have totally vaniſhed; but we have no reaſon to think that the heat of the earth is any thing leſs juſt now than it was a thouſand years ago. The phenomenon is eaſily explained by the propoſitions laid down under the article Heat. If heat is nothing elſe than a certain mode of action in the ethereal fluid, or the matter of light by which it flows out from a body in all directions as radii drawn from the centre to the circumference of a circle; it will then follow, that if an opaque body abſorbs any conſiderable quantity of light, it muſt neceſſarily grow hot. The reaſon of this is plain. The body can hold no more than a certain quantity of ethereal matter; if more is continually forcing itſelf in, that which has already entered muſt go out. But it cannot eaſily get out, becauſe it is hindered by the particles of the body among which it is detained. It makes an effort therefore in all directions to ſeparate the particles from each other; and hence the body expands, and the effort of the fluid to eſcape is felt when we put our hands on the body, which we then ſay is *hot*. Now, as the earth is perpetually abſorbing the ethereal matter, which comes from the ſun in an immenſe ſtream, and which we call his *light*, it is plain, that every pore of it muſt have been filled with this matter long ago. The quantity that is lodged in the earth, therefore, muſt be continually endeavouring to ſeparate its particles from each other, and conſequently muſt make it hot. The atmoſphere, which is perpetually receiving that portion of the ethereal matter which iſſues from the earth, counteracts the force of the internal heat, and cools the external ſurface of the earth, and for a conſiderable way down; and hence the earth for 20 or 30 feet down, ſhows none of that heat which is felt at greater depths. See Heat.

Heat, in medicine. Great heats are not ſo much the immediate, as the remote, cauſe of a general ſickneſs, by relaxing the fibres, and diſpoſing the juices to putrefaction; eſpecially among ſoldiers and perſons expoſed the whole day to the ſun; for the greateſt heats are ſeldom found to produce epidemic diſeaſes, till the perſpiration is ſtopped by wet clothes, fogs, dews, damps, &c. and then ſome bilious or putrid diſtemper is the certain conſequence, as fluxes and ardent intermitting fevers. Nevertheleſs, it muſt be allowed, that heats have ſometimes been ſo great as to prove the more immediate cauſe of particular diſorders; as when centinels have been placed without cover or frequent reliefs in ſcorching heats; or when troops march or are exerciſed in the heat of the day; or when people imprudently lie down and ſleep in the ſun. All theſe circumſtances are apt to bring on diſtempers, varying according to the ſeaſon of the year. In the beginning of ſummer, theſe errors produce inflammatory fevers; and in autumn, a remitting fever or dyſentery. To prevent, therefore, the effects of immoderate heats, commanders have found it expedient ſo to order the marches that the men come to the ground before the heat of the day; and to give ſtrict orders that none of them ſleep out of their tents, which in fixed encampments, may be covered with boughs to ſhade them from the ſun. It is likewiſe a rule of great importance to have the ſoldiers exerciſed before the cool of the morning is over; for by that means not only the ſultry heats are avoided, but the blood being cooled, and the fibres braced, the body will be better prepared to bear the heat of the day. Laſtly, in very hot weather, it has often been found proper to ſhorten the centinel's duty, when obliged to ſtand in the ſun.

Heath, in botany. See Erica.

Berry-bearing Heath. See Empetrum.

HEATH (James), an Engliſh hiſtorian, was born 1629 at London; where his father, who was the king's cutler, lived. He was educated at Weſtminſter ſchool, and became a ſtudent of Chriſt-church, Oxford, in 1646. In 1648, he was ejected from thence by the parliament viſitors for his adherence to the royal cauſe; lived upon his patrimony till it was almoſt ſpent; and then marrying was obliged to write books and correct the preſs in order to maintain his family. He died of a conſumption and dropſy at London in Auguſt 1664, and left ſeveral children to the pariſh. His principal publications were, 1. A brief Chronicle of the late Inteſtine War in the Three Kingdoms of England, Scotland, and Ireland, &c. 1661, 8vo; afterwards enlarged by the author and completed from 1637 to 1663, in four parts, 1663, in a thick 8vo. To this was again added a continuation from 1663 to 1675 by John Philips, nephew by the mother to Milton, 1676, folio. 2. Flagellum: or, The Life and Death, Birth and burial, of Oliver Cromwell, the late Uſurper 1663. The third edition came out with additions in 1665, 8vo. 3. A New Book of Loyal Engliſh Martyrs and Confeſſors, who have endured the Pains and Terrors of Death, Arraignment, &c. for the Maintenance of the juſt and legal government of theſe Kingdoms both in Church and State, 1663, 12mo. The reaſon why ſuch writers as our author continue to be read, and will probably always be read, is not only becauſe *Hiſtoria quoquo modo ſcripta delectat:* but alſo becauſe in the meaneſt hiſtorian there will always be found ſome facts, of which there will be no cauſe to doubt the truth, and which yet will not be found in the beſt. Thus Heath, who perhaps had nothing but pamphlets and news papers to compile from, frequently relates facts that throw light upon the hiſtory of thoſe times, which Clarendon, though he drew every thing from the moſt authentic records, has omitted.

Heath (Thomas), an aldermen of Exeter, and father of John Heath, Eſq; one of the judges of the Common pleas, was author of An Eſſay towards a new Engliſh Verſion of the Book of Job from the original Hebrew, with ſame account of his Life, 1755, 8vo.—His brother Benjamin, a lawyer of eminence, and town-clerk of Exeter, was likewiſe an author; and wrote, 1. An Eſſay towards a demonſtrative Proof of the Divine Exiſtence, Unity, and Attributes; to which is premiſed, A ſhort defence of the Argument commonly called *à priori*, 1740. 2. The Caſe of the County of Devon with reſpect to the Conſequences of the New Exciſe Duty on Cyder and Perry. Publiſhed by the direction of the Committee appointed at a General meeting of that County to ſuperintend the Application for the Repeal of that Duty, 1763, 4to. 3. *Notæ ſive Lectiones ad Tragicorum Græcorum veterum, Æſchyl*, &c. 1752, 4to; a work which places the author's learning and critical ſkill in a very conſpicuous light. The ſame ſolidity of judgment apparent in the preceding, diſtinguiſhed the author's laſt production. 4. A Reviſal of Shakeſpeare's, Text, wherein the alterations introduced into it by the more modern editors and critics are particuliarly conſidered, 1765, 8vo.

HEATHENS, in matters of religion. See Pagans.

HEAVEN, literally ſignifies the expanſe of the firmament, ſurrounding our earth, and extended every way to an immenſe diſtance.

Heaven, among Chriſtian divines and philoſophers, is conſidered as a place in ſome remote part of infinite ſpace in which the omnipreſent Deity is ſaid to afford a nearer and more immediate view of himſelf, and a more ſenſible manifeſtation of his glory, than in the other parts of the univerſe. This is often called the *empyrean*, from that ſplendor with which it is ſuppoſed to be inveſted; and of this place the inſpired writers give us the moſt noble and magnificent deſcriptions.

The Pagans conſidered heaven as the reſidence only of the celeſtial gods, into which no mortals were admitted after death unleſs they were deified. As for the ſouls of good men they were conſigned to the elyſian fields. See *Elysian-Fields*.

Heaven, among aſtronomers, called alſo the æthereal and ſtarry heaven, is that immenſe region where the ſtars, planets, and comets, are diſpoſed. See *Astronomy, paſſim.*

This is what Moſes calls the *firmament*, ſpeaking of it as the work of the ſecond day's creation; at leaſt it is thus the word רקיע is uſually rendered by his interpreters; though ſomewhat abuſively, to countenance their own notions of the heavens, being firm or ſolid. The word it is certain, properly ſignifies no more than expanſe or extenſion; a term very well adapted by the prophet to the impreſſion which the heavens make on our ſenſes; whence in other parts of ſcripture, the heaven is compared to a curtain or a tent ſtretched out to dwell in. The LXX firſt added to this idea of expanſion that of firm or ſolid; rendering it by στερεωμα, according to the philoſophy of thoſe times; in which they have been followed by the modern tranſlators.

The later philoſophers, as Des Cartes, Kircher, &c. have eaſily demonſtrated this heaven not to be ſolid, but fluid; but they ſtill ſuppoſe it full, or perfectly denſe, without any vacuity, and cantoned out into many vortices.——But others have overturned not only the ſolidity, but the ſuppoſed plenitude, of the heavens. Sir Iſaac Newton has abundantly ſhown the heavens void of almoſt all reſiſtance; and, conſequently, of almoſt all matter: this he proves from the phenomena of the celeſtial bodies; from the planets perſiſting in their motions without any ſenſible diminution of their velocity; and the comets freely paſſing in all directions towards all parts of the heavens.

Heaven, taken in a general ſenſe, for the whole expanſe between our earth and the remoteſt regions of the fixed ſtars, may be divided into two very unequal parts, according to the matter found therein; viz. the atmoſphere, or aerial heaven poſſeſſed by air; and the æthereal heaven, poſſeſſed by a thin, unreſiſting medium, called *æther*.

Heaven is more particuliarly uſed, in aſtronomy, for an orb, or circular region, of the æthereal heaven. The ancient aſtronomers aſſumed as many different heavens as they obſerved different motions therein. Theſe they ſuppoſed all to be ſolid, as thinking they could not otherwiſe ſuſtain the bodies fixed in them; and ſpherical, that being the moſt proper form for motion. Thus we had ſeven heavens for the ſeven planets; viz. the heavens of the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn. The eighth was for the fixed ſtars, which they particularly called the *firmament* Ptolemy adds a ninth heaven, which he called the *primum mobile*. After him two cryſtalline heavens were added by king Alphonſus, &c. to account for ſome irregularities in the motions of the other heavens: and laſtly an empyrean heaven was drawn over the whole, for the reſidence of the Deity; which made the number twelve. But others admitted many more heavens according as their different views and hypotheſes required. Eudoxes ſuppoſes 23, Calippus 30, Regiomontanus 33, Ariſtotle 47, and Fracaſtor no leſs than 70. It muſt be added, however, that the aſtronomers did not much concern themſelves whether the heavens they thus allow of were real or not; provided they ſerved a purpoſe in accounting for any of the celeſtial motions, and agreed with the phenomena.

HEBDOMADARY; Hebdomadarius, or Hebdomadius, a member of a chapter or convent, whoſe week it is to officiate in the choir, to rehearſe the anthems and prayers, and to perform the uſual functions which the ſuperiors perform at ſolemn feaſts, and other extraordinary occaſions. The word is formed of the Greek ἑϐδομας, which ſignifies the number *ſeven*: of ἑπτα, *ſeven*.

The hebdomadary generally collates to the benefices which become vacant during his week; though it is uſually looked upon as an abuſe.

In cathedrals, the hebdomadary was a canon or prebendary, who had the peculiar care of the choir, and the inſpection of the officers for his week.

In monaſteries, the hebomadary is he who waits at table for a week, or other ſtated period; directs and aſſiſts the cook, &c.

HEBDOME, a ſolemnity of the ancient Greeks, in honour of Apollo, in which the Athenians ſung hymns to his praiſe, and carried in their hands branches of laurel The word ſignifies the *ſeventh day*, this ſolemnity being obſerved on the ſeventh day of every lunar month.

HEBE, in ancient mythology, a goddeſs, the idea of whom, among the Romans, ſeems to have been much the ſame with that of eternal youth, or an immortality of bliſs; agreeably to which, ſhe is repreſented on a gem, in the great duke's collection at Florence, with a young airy look, and drinking out of a little bowl; or, according to Milton's expreſſion, "Quaffing immortality and joy." She is fabled to have been a daughter of Jupiter and Juno. According to ſome ſhe was the daughter of Juno only, who conceived her after eating lettuces. As ſhe was fair and always in the bloom of youth, ſhe was called the goddeſs of youth, and made by her mother cup-bearer to all the gods. She was diſmiſſed from her office by Jupiter, becauſe ſhe fell down in an indecent poſture as ſhe was pouring nectar to the gods at a grand feſtival; and Ganymedes, the favourite of Jupiter, ſucceeded her as cup-bearer. She was employed by her mother to prepare her chariot, and to harneſs her peacocks whenever requiſite. When Hercules was raiſed to the rank of a god, he was reconciled to Juno by marrying her daughter Hebe, by whom he had two ſons, Alexiares and Anicetus. As Hebe had the power of reſtoring gods and men to the vigour of youth, ſhe, at the inſtance of her huſband, performed that kind office to Iolaus his friend. Hebe was worſhipped at Sicyon, under the name of Dia, and at Rome under that of Juventus.

HEBENSRETIA, in botany: A genus of the angioſpermia order, belonging to the didynamia claſs of plants; and in the natural method ranking under the 48th order, *aggregatæ*. The calyx is emarginated, and divided below; the corolla unilabiate; the lip riſing upwards, and quadrifid; the capſule diſpermous; the ſtamina inſerted into the margin of the limb of the corolla.

HEBER, the ſon of Salah, and father of Peleg, from whom the Hebrews derived their name, according to Joſephus, Euſebius, Jerome, Bede, and moſt of the interpreters of the ſacred writings; but Huet biſhop of Avranches, in his Evangelical Demonſtration, has attempted to prove, that the Hebrews took their name from the word *heber*, which ſignifies *beyond*, becauſe they came from beyond the Euphrates. Heber is ſuppoſed to have been born 2281 years B. C. and to have lived 464 years.

HEBRAISM, an idiom, or manner of ſpeaking, peculiar

Hebrew.

peculiar to the Hebrew language. See the next article.

HEBREW, ſomething relating to the Hebrew. See HEBREWS. Thus we ſay, *Hebrew Bible*. See BIBLE.

Hebrew character. There are two kinds of Hebrew characters: the ancient, called alſo the *ſquare*: and the modern, or rabbinical characters.

1. The ſquare Hebrew takes its denomination from the figure of its characters, which ſtand more ſquare, and have their angles more exact and preciſe than the other. This character is uſed in the text of the holy ſcripture, and their other principal and moſt important writings. When both this and the rabbinical character are uſed in the ſame work, the former is for the text, or the fundamental part; and the latter for the acceſſory part, as the gloſs, notes, commentaries, &c.

The beſt and moſt beautiful characters of this kind, are thoſe copied from the characters in the Spaniſh manuſcripts; next, thoſe from the Italian manuſcripts; then thoſe from the French; and laſtly, thoſe of the Germans, whoſe characters are much the ſame, with reſpect to the other genuine ſquare Hebrew characters, that the Gothic or Dutch characters are with reſpect to the Roman.

Several authors contend, that the ſquare character is not the real ancient Hebrew character, written from the beginning of the language to the time of the Babyloniſh captivity; but that it is the Aſſyrian, or Chaldee character, which the Jews aſſumed, and accuſtomed themſelves to during the captivity, and retained afterwards. They ſay, that the Jews, during their captivity, had quite diſuſed their ancient character; ſo that Ezra found it neceſſary to have the ſacred books tranſcribed into the Chaldean ſquare character. Theſe authors add, that what we call the Samaritan character, is the genuine ancient Hebrew. Of this opinion are Scaliger, Bochart, Caſaubon, Voſſius, Grotius, Walton, Capellius, &c. and among the ancients Jerome and Euſebius. On this ſide it is urged, that the preſent characters are called Aſſyrian by the ancient Jewiſh writers of the Talmud, and therefore muſt have been brought from Aſſyria; but to this argument it is replied, that there were two ſorts of characters anciently in uſe, viz. the ſacred or preſent ſquare character, and the profane or civil, which we call Samaritan; and that the ſacred is called Aſſyrian, becauſe it firſt began in Aſſyria to come into common uſe. It is farther alleged, that the Chaldee letters, which the Jews now uſe, were unknown to the ancient Jews before the captivity, from Dan. i. 4. Moreover, it is inferred from 2 Kings, xvii. 28. whence we learn that a Jewiſh prieſt was ſent to teach the Samaritans the worſhip of Jehovah; on which occaſion he muſt have taught them the law; and yet no mention occurs of his teaching them the language or character that the law was then written in, the character which the Samaritans uſed. But the chief argument is taken from ſome ancient Jewiſh ſhekles, with a legend on one ſide "The ſhekel of Iſrael," and on the other "Jeruſalem the holy," both in Samaritan characters. Theſe ſhekles, it is ſaid, muſt have been coined before the diviſion of the two kingdoms of Judah and Iſrael, or at leaſt before the Aſſyrian captivity, becauſe the Samaritans never afterwards reckoned Jeruſalem holy. On the other ſide, for the primitive antiquity of the ſquare character, are the two Buxtorfs, Leuſden, Calovius, Hottinger, Spanheim, Lightfoot, &c. They urge, from Matthew v. 18. that *jod* is really the leaſt of the conſonants in the preſent Hebrew, whereas it is one of the largeſt characters in the Samaritan alphabet; but Walton replies, that if our Saviour here ſpeaks of the leaſt letter of the alphabet, we can only infer that the Chaldee character was uſed in our Saviour's time, which is not denied by thoſe who maintain the Samaritan to be the original. They alſo allege, that the Jews were too obſtinate and ſuperſtitious to allow their ſacred character to be altered; but if this was done under the direction and authority of Ezra, the argument will be much invalidated. Farther, they ſay that Ezra could not alter the ancient character, becauſe it was impoſſible to make the alterations in all their copies. This argument, however, is contradicted by fact; ſince the old Engliſh black letter is actually changed for the Roman. They ſay, likewiſe, that Ezra was not diſpoſed to profane the ſacred writings with a heathen character: but this ſuppoſes that Ezra was ſo ſuperſtitious as to imagine, that there was ſome peculiar ſanctity in the ſhape of the letters. Moreover, the advocates for this opinion appeal to ancient coins found in Judæa, with a legend in the Chaldee or Aſſyrian character. But the genuineſs of theſe coins is much ſuſpected.

The learned Jeſuit Souciet maintains, with great addreſs, that the ancient Hebrew character is that found on the medals of Simon, and others, commonly called *Samaritan medals*; but which, he aſſerts, were really Hebrew medals, ſtruck by the Jews, and not the Samaritans.

Buxtorf endeavours to reconcile theſe two opinions, by producing a variety of paſſages from the rabbies to prove, that both theſe characters were anciently uſed; the preſent ſquare character being that in which the tables of the law, and the copy depoſited in the ark, were written; and the other character being uſed in the copies of the law which were written for private and common uſe, and in civil affairs in general; and that after the captivity, Ezra enjoined the former to be uſed by the Jews on all occaſions, leaving the latter to the Samaritans and apoſtates. But it can hardly be allowed by any who conſider the difference between the Chaldee and Samaritan characters, with reſpect to convenience and beauty, that they were ever uſed at the ſame time. After all, it is of no great moment which of theſe, or whether either of them, were the original characters; ſince it appears, that no change of the words has ariſen from the manner of writing them, becauſe the Samaritan and Jewiſh Pentateuch almoſt always agree after ſo many ages. It is moſt probable that the form of theſe characters has varied in different periods; this appears from the teſtimony of Montfaucon, in his Hexapla Origenis, vol. i. p. 22. &c. and is implied in Dr Kennicot's making the characters in which manuſcripts are written one teſt of their age.

2. The modern, rabbinical, is a good neat character, formed of the ſquare Hebrew, by rounding it, and entrenching moſt of the angles or corners of the letters, to make it the more eaſy and flowing. The letters uſed by the Germans are very different from the

rabbinical character uſed every where elſe, though all formed alike from the ſquare character, but the German in a more ſlovenly manner than the reſt.—The rabbins frequently make uſe either of their own, or the ſquare Hebrew character, to write the modern languages in. There are even books in the vulgar tongues printed in Hebrew characters; inſtances whereof are ſeen in the French king's library.

HEBREW Language, that ſpoken by the Hebrews, and wherein the Old Teſtament is written.

This appears to be the moſt ancient of all the languages in the world, at leaſt we know of none older; and ſome learned men are of opinion, that this is the language in which God ſpoke to Adam in Paradiſe. Dr Sharpe adopts the opinion that the Hebrew was the original language; not indeed that the Hebrew is the unvaried language of our firſt parents, but that it was the general language of men at the diſperſion; and however it might have been improved and altered from the firſt ſpeech of our firſt parents, it was the original of all the languages, or almoſt all the languages, or rather dialects, that have ſince ariſen in the world.

The books of the Old Teſtament are the only pieces to be found, in all antiquity, written in pure Hebrew; and the language of many of theſe is extremely ſublime: it appears perfectly regular, and particularly ſo in its conjugations. Indeed, properly ſpeaking, it has but one conjugation; but this is varied in each ſeven or eight different ways, which has the effect of ſo many different conjugations, and affords a great variety of expreſſions to repreſent by a ſingle word the different modifications of a verb, and many ideas which in the modern and in many of the ancient and learned languages cannot be expreſſed without a periphraſis.

The primitive words, which are called *roots*, have ſeldom more than three letters or two ſyllables.

In this language there are 22 letters, only five of which are uſually reckoned vowels, which are the ſame with ours, viz. *a, e, i, o, u;* but then each vowel is divided into two, a long and a ſhort, the ſound of the former being ſomewhat grave and long, and that of the latter ſhort and acute: it muſt however be remarked, that the two laſt vowels have ſounds that differ in other reſpects beſides quantity and a greater or leſs elevation. To theſe 10 or 12 vowels may be added others, called *ſemi-vowels*, which ſerve to connect the conſonants, and to make the eaſier tranſitions from one to another. The number of accents in this languge are indeed prodigious: of theſe there are near 40, the uſe of ſome of which, notwithſtanding all the inquiries of the learned, are not yet perfectly known. We know, in general, that they ſerve to diſtinguiſh the ſentences like the points called *commas, ſemicolons*, &c. in our language; to determine the quantity of the ſyllables; and to mark the tone with which they are to be ſpoken or ſung. It is no wonder, then, that there are more accents in the Hebrew than in the other languages, ſince they perform the office of three different things, which in other languages are called by different names.

As we have no Hebrew but what is contained in the Scripture, that language to us wants a great many words; not only becauſe in thoſe primitive times the languages were not ſo copious as at preſent; but alſo on this account, that the inſpired writers had no occaſion to mention many of the terms that might be in the language.

The Chaldee, Syriac, Ethiopic, &c. languages, are by ſome held to be only dialects of the Hebrew; as the French, Italian, Spaniſh, &c. are dialects of the Latin. It has been ſuppoſed by many very learned men, that the Hebrew characters or letters were often uſed hieroglyphically, and that each had its ſeveral diſtinct ſenſe underſtood as a hieroglyphic. Neuman, who ſeems to have taken infinite pains to find out this ſecret meaning of theſe letters, gives the following explication: א *aleph*, he ſays, is a character denoting motion, readineſs, and activity; ב *beth*, ſignifies, 1. Matter, body, ſubſtance, thing; 2. Place, ſpace, or capacity; and, 3. In, within, or contained: ג *gimel* ſtands, for flexion, bending, or obliquity of any kind: ד *daleth*, ſignifies any protruſion made from without, or any promotion of any kind: ה *he*, ſtands for preſence, or demonſtrative eſſence of any thing: ו *vau*, ſtands for copulation or growing together of things: ז *dſain*; expreſſes vehement protruſion and violent compreſſion, ſuch as is occaſioned by at once violently diſcharging and conſtringing a thing together; it alſo ſignifies ſometimes the ſtraightening of any figure into a narrow point at the end; ח *cheth*, expreſſes aſſociation, ſociety, or any kind of compoſition or combination of things together: ט *teth*, ſtands for the withdrawing, drawing back, or receſs of any thing: י *jod*, ſignifies extenſion and length, whether in matter or in time: כ *caph*, expreſſes a turning, curvedneſs, or concavity: ל *lamech*, ſtands for an addition, acceſs, impulſe, or adverſation, and ſometimes for preſſure: מ *mem*, expreſſes amplitude, or the amplifying any thing in whatever ſenſe; in regard to continuous qualities, it ſignifies the adding length, breadth, and circumference; and in disjunct qualities it ſignifies multitude: נ *nun*, ſignifies the propagation of one thing from another, or of the ſame thing from one perſon to another: ס *ſamech*, expreſſes cincture and coarctation: ע *ain*, ſtands for obſervation, objection, or obviation: פ *pe*, ſtands for a crookedneſs or an angle of any figure: צ *tſade*, expreſſes contiguity and cloſe ſucceſſion: ק *koph*, expreſſes a circuit or ambit: ר *reſh*, expreſſes the egreſs of any thing, as alſo the exterior part of a thing, and the extremity or end of any thing: ש *ſhin*, ſignifies the number three, or the third degree, or the utmoſt perfection of any thing: ת *tau*, expreſſes a ſequel, continuation, or ſucceſſion of any thing.

According to this explication, as the ſeveral particular letters of the Hebrew alphabet ſeparately ſignify the ideas of motion, matter, ſpace, and ſeveral modifications of matter, ſpace, and motion, it follows, that a language, the words of which are compoſed of ſuch expreſſive characters, muſt neceſſarily be of all languages the moſt perfect and expreſſive, as the words formed of ſuch letters, according to their determinate ſeparate ſignifications, muſt convey the idea of all the matters contained in the ſenſe of the ſeveral characters, and be at once a name and a definition, or ſuccinct deſcription of the ſubject, and all things material as well as ſpiritual, all objects in the natural and moral world, muſt be known as ſoon as their names are known, and their ſeparate letters conſidered.

The words *urim* and *thummim* are thus eaſily explained and found, perhaps the moſt appoſite and expreſſive words that were ever formed.

Rabbinical, or *modern* HEBREW, is the language uſed by the rabbins in the writings they have compoſed. The baſis or body hereof is the Hebrew and Chaldee, with divers alterations in the words of theſe two languages, the meanings whereof they have conſiderably enlarged and extended. Abundance of things they have borrowed from the Arabic: the reſt is chiefly compoſed of words and expreſſions, chiefly from the Greek; ſome from the Latin; and others from the other modern tongues; particularly that ſpoken in the place where each rabbin lived or wrote.

The rabbinical Hebrew muſt be allowed to be a very copious language. M. Simon, in his Hiſt. Crit. du Vieux Teſtam. liv. iii. chap. 27. obſerves, that there is ſcarce any art or ſcience but the rabbins have treated thereof in it. They have tranſlated moſt of the ancient philoſophers, mathematicians, aſtronomers, and phyſicians; and have written themſelves on moſt ſubjects: they do not want even orators and poets. Add, that this language, notwithſtanding it is ſo crowded with foreign words, has its beauties viſible enough in the works of thoſe who have written well in it.

HEBREWS, the deſcendants of Heber, commonly called *Jews*. See HEBER and JEWS.

HEBREWS, or *Epiſtle to the Hebrews*, a canonical book of the New Teſtament.

Though St Paul did not prefix his name to this epiſtle, the concurrent teſtimony of the beſt authors ancient and modern, afford ſuch evidence of his being the author of it, that the objections to the contrary are of little or no weight.

The Hebrews, to whom this epiſtle was wrote, were the believing Jews of Paleſtine; and its deſign was to convince them, and by their means all the Jewiſh converts whereſoever diſperſed, of the inſufficiency and aboliſhment of the ceremonial and ritual law.

HEBRIDES, the general name of ſome iſlands lying to the north-weſt of Scotland, of which kingdom they conſtitute a part. They are ſituated between the 55th and 59th degrees of latitude, are ſuppoſed to be about 300 in number, and to contain 48,000 inhabitants. The names of the largeſt are SKIE, MULL, ILAY and ARRAN. Of theſe iſlands Mr Pennant hath given the following hiſtory.

“ All the accounts left us by the Greek and Roman writers are inveloped in obſcurity: at all times brief even in their deſcriptions of places they had eaſieſt acceſs to, and might have deſcribed with the moſt ſatisfactory preciſion; but in remote places, their relations furniſh little more than hints, the food for conjecture to the viſionary antiquary.

“ That Pytheas, a traveller mentioned by Strabo, had viſited Great Britain, I would wiſh to make only *apocryphal*. He aſſerts that he viſited the remoter parts; and that he had alſo ſeen Thule, the land of romance amongſt the ancients; which all might pretend to have ſeen; but every voyager, to ſwell his fame, made the iſland he ſaw laſt the Ultima Thule of his travels. If Pytheas had reached theſe parts, he might have obſerved, floating in the ſeas, multitudes of gelatinous animals, the *meduſæ* of Linnæus, and out of theſe have formed his fable. He made his THULE *a compoſition of neither earth, ſea, nor air; but like a compoſition of them all*: then, catching his ſimile from what floated before him, compares it to the *lungs* of the ſea, the Ariſtotelian idea of theſe bodies; and from him adopted by naturaliſts, ſucceſſors to that great philoſopher. Strabo very juſtly explodes theſe abſurd tales; yet allows him merit in deſcribing the climate of the places he had ſeen. As a farther proof of his having viſited the Hebrides, he mentions their friendly ſky, that prohibits the growth of the finer fruits: and that the natives are obliged to carry their corn under ſhelter, to beat the grain out, leſt it ſhould be ſpoiled by the defect of ſun and violence of the rains. This is the probable part of his narrative; but when the time that the great geographer wrote is conſidered, at a period that theſe iſlands had been neglected for a very long ſpace by the Romans, and when the difficulties of getting among a fierce and unfriendly nation muſt be almoſt inſuperable, doubts innumerable reſpecting the veracity of this relater muſt ariſe. All that can be admitted in favour of him is, that he was a great traveller: and that he might have either viſited Britain from ſome of the nations commercing with our iſle; or received from them accounts, which he afterwards dreſſed out, mixed with the ornaments of fable. A traffic muſt have been carried on with the very northern inhabitants of our iſlands in the time of Pytheas; for one of the articles of commerce mentioned by Strabo, the ivory bits, were made either of the teeth or the walrus, or of a ſpecies of whale native of the northern ſeas.

“ The geographer Mela who flouriſhed in the reign of Claudius, is the next who takes notice of our leſſer iſlands. He mentions the Orcades conſiſting of 30; the Æmodæ of ſeven. The Romans had then made a conqueſt of the former, and might have ſeen the latter; but from the words of the hiſtorian, it is probable that the Shetland iſlands were thoſe intended; for he informs, that the ‘ Æmodæ were carried out over againſt Germany:’ the ſite of the Hebrides will not admit this deſcription, which agrees very well with the others; for the ancients extended their Germany, and its imaginary iſlands, to the extreme north.

“ Pliny the elder is the next that mentions theſe remote places. He lived later than the preceding writers, and of courſe his information is fuller; by means of intervening diſcoveries, he has added ten more to the number of the Orcades; is the firſt writer that mentions the Hœbudes, the iſlands in queſtion; and joins in the ſame line the Æmodæ, or, as it is in the beſt editions more properly written, the *Acmodæ*, or extreme point of the Roman expeditions to the north, as the Shetland iſles in the higheſt probability were. Pliny and Mela agree in the number of the Æmodæ, or Acmodæ; the former makes that of the Hœbudes 30; an account extremely near the truth, deducting the little iſles, or rather rocks, that ſurround moſt of the greater, and many of them ſo indiſtinct as ſcarcely to be remarked, except on an actual ſurvey.

“ Solinus ſucceeds Pliny. If he, as is ſuppoſed, was cotemporary with Agricola, he has made very ill uſe of the light he might have received from the expeditions of that great general: his officers might have furniſhed the hiſtorian with better materials than thoſe he has communicated. He has reduced the number of the Hœbudes to five. He tells us, that “the inhabitants were unacquainted with corn: that they lived only on fiſh and milk: that they had one king, as the iſlands were only ſeparated from each other by narrow ſtraits: that their prince was bound by certain rules of government, to do juſtice; and was prevented by poverty from deviating from the true courſe, being ſupported by the public, and allowed nothing that he could call his own, not even a wife; but then he was allowed free choice, by turns one out of every diſtrict, of any female that caught his affection; which deprived him of all ambition about a ſucceſſor.

“By the number of theſe iſlands, and by the minute attention given by the hiſtorian to the circumſtance of their being ſeparated from each other by narrow ſtraits, I ſhould imagine, that which is now called the *Long Iſland*, and includes Lewis, North Uiſt, Benbecula, South Uiſt, and Barra, to have been the five Hœbudes of Solinus; for the other great iſlands, ſuch as Skie, &c. are too remote from each other to form the preceding very characteriſtic deſcription of that chain of iſlands. Theſe might naturally fall under the rule of one petty prince; almoſt the only probable part of Solinus's narrative.

“After a long interval appears Ptolemy, the Egyptian geographer. He alſo enumerates five Ebudæ; and has given each a name: the Weſtern *Ebuda*, the Eaſtern, *Ricina*, *Maleos*, *Epidium*. Cambden conjectures them to be the modern Skie, Lewis, Rathry or Racline, Mull, and Ilay: and I will not controvert his opinion.

“The Roman hiſtorians give very little light into the geography of theſe parts. Tacitus, from whom moſt might have been expected, is quite ſilent about the names of places; notwithſtanding he informs us, that a fleet by the command of Agricola performed the circumnavigation of Britain. All that he takes notice of is the diſcovery and the conqueſt of the Orkneys: it ſhould ſeem, that with the biographers of an ambitious nation, nothing ſeemed worthy of notice but what they could dignify with the glory of victory.

“It is very difficult to aſſign a reaſon for the change of name from *Ebudæ* to *Hebrides*: the laſt is modern; and ſeems, as the annotator on Dr Macpherſon ſuppoſes, to have ariſen from the error of a tranſcriber, who changed the *u* into *ri*.

“From all that has been collected from the ancients, it appears that they were acquainted with little more of the Hebrides than the bare names: it is probable that the Romans, either from contempt of ſuch barren ſpots, from the dangers of the ſeas, the violence of the tides, and the horrors of the narrow ſounds, in the inexperienced ages of navigation, never attempted their conqueſt, or ſaw more of them than what they had in ſight during the few circumnavigations of Great Britain, which were expeditions more of oſtentation than of utility.

“The inhabitants had probably for ſome ages their own governors; one little king to each iſland, or to each groupe as neceſſity required. It is reaſonable to ſuppoſe, that their government was as much divided as that of Great Britain, which, it is well known, was under the direction of numbers of petty princes before it was reduced under the power of the Romans.

“No account is given in hiſtory of the time theſe iſlands were annexed to the government of Scotland. If we may credit our Saxon hiſtorians, they appear to have been early under the dominion of the Picts; for Bede and Adamnanus inform us, that ſoon after the arrival of St Columba in their country, Brude, a Pictiſh monarch, made the ſaint a preſent of the celebrated iſland of Iona. But neither the holy men of this iſland, nor the natives of the reſt of the Hebrides, enjoyed a permanent repoſe after this event. The firſt invaſion of the Danes does not ſeem to be eaſily aſcertained. It appears that they ravaged Ireland, and the iſle of Rathry, as early as the year 735. In the following century, their expeditions became more frequent: Harold Harfager, or the *light-haired*, purſued, in 875, ſeveral petty princes, whom he had expelled out of Norway; who had taken refuge in the Hebrides, and moleſted his dominions by perpetual deſcents from thoſe iſlands. He ſeems to have made a rapid conqueſt: he gained as many victories as he fought battles; he put to death the chief of the pirates, and made an indiſcriminate ſlaughter of their followers. Soon after his return, the iſlanders repoſſeſſed their ancient ſeats: and, in order to repreſs their inſults, he ſent Ketil the *flat noſed* with a fleet and ſome forces for that purpoſe. He ſoon reduced them to terms, but made his victories ſubſervient to his own ambition: he made alliances with the reguli he had ſubdued; he formed intermarriages, and confirmed to them their old dominions. This effected he ſent back the fleet to Harold; openly declared himſelf independent; made himſelf prince of the Hebrides; and cauſed them to acknowledge him as ſuch by the payment of tribute and the badges of vaſſalage. Ketil remained, during life, maſter of the iſlands; and his ſubjects appear to have been a warlike ſet of freebooters, ready to join with any adventurers. Thus when Eric, ſon of Harold Harfager, after being driven out of his own country, made an invaſion of England, he put with his fleet into the Hebrides, received a large reinforcement of people fired with the hopes of prey, and then proceeded on his plan of rapine. After the death of Ketil, a kingdom was in aftertimes compoſed out of them, which, from the reſidence of the little monarch in the iſle of Man, was ſtyled that of *Man*. The iſlands became tributary to that of Norway for a conſiderable time, and princes were ſent from thence to govern; but at length they again ſhook off the yoke. Whether the little potentates ruled independent, or whether they put themſelves under the protection of the Scottiſh monarchs, does not clearly appear; but it is reaſonable to ſuppoſe the laſt, as Donald-Bane is accuſed of making the Hebrides the price of the aſſiſtance given him by the Norwegians againſt his own ſubjects. Notwithſtanding they might occaſionally ſeek the protection of Scotland, yet they never were without princes of their own: policy alone directed them to the former. From the chronicles of the kings of Man we learn, that they had a ſucceſſion of princes.

“In 1089 is an evident proof of the independency of the iſlanders on Norway; for, on the death of Lagnan, one of their monarchs, they ſent a deputation to O'Brian king of Ireland, to requeſt a regent of royal blood to govern them during the minority of their young prince. They probably might in turn compliment in ſome other reſpects their Scottiſh neighbours: the iſlanders muſt have given them ſome pretence to ſovereignty; for,

"In 1093, Donald-bane, king of Scotland, calls in the aſſiſtance of Magnus the Barefooted, king of Norway, and bribes him with the promiſe of all the iſlands. Magnus accepts the terms; but at the ſame time boaſts, that he does not come to invade the territories of others, but only to reſume the ancient rights of Norway. His conqueſts are rapid and complete; for, beſides the iſlands, by an ingenious fraud he adds Cantyre to his dominions.

"The Hebrides continued governed by a prince dependent on Norway, a ſpecies of viceroy appointed by that court; and who paid, on aſſuming the dignity, ten marks of gold, and never made any other pecuniary acknowledgment during life: but if another viceroy was appointed, the ſame ſum was exacted from him. Theſe viceroys were ſometimes Norwegians, ſometimes natives of the iſles. In 1097 we find, that Magnus deputes a nobleman of the name of *Ingemund*: in after times we learn, that natives were appointed to that high office. Thus were the Hebrides governed, from the conqueſt by Magnus, till the year 1263, when Acho, or Haquin, king of Norway, by an unfortunate invaſion of Scotland, terminating in his defeat at Largs, ſo weakened the powers of his kingdom, that his ſucceſſor Magnus IV. was content to make a ceſſion of the iſlands to Alexander III.; but not without ſtipulating for the payment of a large ſum, and of a tribute of 100 merks for ever, which bore the name of the *annual of Norway*. Ample proviſion was alſo made by Magnus in the ſame treaty, for the ſecurity of the rights and properties of his Norwegian ſubjects, who choſe to continue in the iſles; where many of their poſterity remain to this day.

"Notwithſtanding this revolution, Scotland ſeems to have received no real acquiſition of ſtrength. The iſlands ſtill remained governed by powerful chieftains, the deſcendants of Somerled, thane of Heregaidel, or Argyle, who, marrying the daughter of Olave, king of Man, left a divided dominion to his ſons Dugal and Reginald: from the firſt were deſcended the Macdougals of Lorn; from the laſt, the powerful clan of the Macdonalds. The lordſhip of Argyle, with Mull, and the iſlands north of it, fell to the ſhare of the firſt; Ilay, Cantyre, and the ſouthern iſles, were the portion of the laſt: a diviſion that formed the diſtinction of the Sudereys and Nordereys, (as farther noticed in the article IONA.)

"Theſe chieftains were the ſcourges of the kingdom: they are known in hiſtory but as the devaſtations of a tempeſt; for their paths were marked with the moſt barbarous deſolation. Encouraged by their diſtance from the ſeat of royalty, and the turbulence, of the times, which gave their monarchs full employ, they exerciſed a regal power, and often aſſumed the title: but are more generally known in hiſtory by the ſtyle of the *lords of the iſles*, or the earls of Roſs; and ſometimes by that of the *Great Macdonald*.

"Hiſtorians are ſilent about their proceedings, from the retreat of the Danes, in 1263, till that of 1335, when John, lord of the iſles, withdrew his allegiance. In the beginning of the next century his ſucceſſors were ſo independent, that Henry IV. entered into a formal alliance with the brothers Donald and John. This encouraged them to commit freſh hoſtilities againſt their natural prince. Donald, under pretence of a claim to the earldom of Roſs, invaded and made a conqueſt of that county; but penetrating as far as the ſhire of Aberdeen, after a fierce but undeciſive battle with the royal party, thought proper to retire, and in a little time to ſwear allegiance to his monarch James I. But he was permitted to retain the county of Roſs, and aſſume the title of earl. His ſucceſſor Alexander, at the head of 10,000 men, attacked and burnt Inverneſs; at length, terrified with the preparations made againſt him, he fell at the royal feet, and obtained pardon as to life, but was committed to ſtrict confinement.

"His kinſman and deputy, Donald Balloch, reſenting the impriſonment of his chieftain, excited another rebellion, and deſtroyed the country with fire and ſword: but on his flight was taken and put to death by an Iriſh chieftain, with whom he ſought protection.

"Theſe barbarous inroads were very frequent with a ſet of banditti, who had no other motive in war but the infamous inducement of plunder.

"In the reign of James II. in the year 1461, Donald, another petty tyrant, and earl of Roſs, and lord of the iſles, renewed the pretence of independency; ſurpriſed the caſtle of Inverneſs; forced his way as far as Athol; and obliged the earl and counteſs, with the principal inhabitants, to ſeek refuge in the church of St Bridget, in hopes of finding ſecurity from his cruelty by the ſanctity of the place: but the barbarian and his followers ſet fire to the church, put the eccleſiaſtics to the ſword, and, with a great booty, carried the earl and counteſs priſoners to his caſtle of Claig, in the iſland of Ilay. In a ſecond expedition, immediately following the firſt, he ſuffered the penalty of his impiety: a tempeſt overtook him, and overwhelmed moſt of his aſſociates; and he, eſcaping to Inverneſs, periſhed by the hands of an Iriſh harper: his ſurviving followers returned to Ilay, conveyed the earl and counteſs of Athol to the ſanctuary they had violated, and expiated their crime by reſtoring the plunder, and making large donations to the ſhrine of the offended ſaint.

"John, ſucceſſor to the laſt earl of Roſs, entered into alliance with Edward IV. and ſent ambaſſadors to the court of England, where Edward empowered the biſhop of Durham and earl of Wincheſter to conclude a treaty with him, another Donald Balloch, and his ſon and heir John. They agreed to ſerve the king with all their power, and to become his ſubjects: the earl was to have 100 marks ſterling for life in time of peace, and 200l. in time of war; and theſe iſlands allies, in caſe of the conqueſt of Scotland, were to have confirmed to them all the poſſeſſions benorth of the Scottiſh ſea; and in caſe of a truce with the Scottiſh monarch, they were to be included in it. But about the year 1476, Edward, from a change of politics, courted the alliance of James III. and dropt his new allies. James, determined to ſubdue this rebellicious race, ſent againſt them a powerful army under the earl of Athol; and took leave of him with this good wiſh, *Furth, Fortune, and fill the fetters*; as much as to ſay, "Go forth, be fortunate, and bring home many captives:" which the family of Athol have uſed ever ſince for its motto. Roſs was terrified into ſubmiſſion; obtained his pardon; but was deprived of his earldom, which by act of parliament was then declared unalienably annexed to the crown: at the ſame time the king reſtored to him Knapdale and Cantyre which the earl had reſigned; and inveſted him anew with the lordſhip of the iſles, to hold them of the king by ſervice and relief.

"Thus the great power of the iſles was broken: yet for a conſiderable time after, the petty chieftains were continually breaking out into ſmall rebellions, or harraſſed each other in private war; and tyranny ſeems but to have been multiplied. James V. found it neceſſary to make the voyage of the iſles in perſon in 1536, ſeized and brought away with him ſeveral of the moſt conſiderable leaders, and obliged them to find ſecurity for their own good behaviour and that of their vaſſals. The names of theſe chieftains were (according to Lindeſay), *Mydyart*, *Mac-connel*, *Mac-loyd*, of the Lewis; *Mac-niel*, *Mac-lane*, *Mac-intoſh John Mudyart*, *Mac-kay*, *Mac-kenzie*, and many others: but by the names of ſome of the above, there ſeem to have been continental as well as inſular malecontents. He examined the titles of their holdings; and finding ſeveral to have been uſurped, reunited their lands to the crown. In the ſame voyage he had the glory of cauſing a ſurvey to be taken of the coaſts of Scotland, and of the iſlands, by his pilot Alexander Lindeſay; which were publiſhed in 1583, at Paris, by Nicholas de Nicholay geographer to the French monarch.

"The troubles that ſucceeded the death of James occaſioned a neglect of theſe inſulated parts of the Scottiſh dominions and left them in a ſtate of anarchy. In 1614, the Mac-donalds made a formidable inſurrection, oppugning the royal grant of Cantyre to the earl of Argyle and his relations. The petty chieftains continued in a ſort of rebellion; and the ſword of the greater, as uſual in weak governments was employed againſt them: the encouragement and protection given by them to pirates, employed the power of the Campbells during the reign of James VI. and the beginning of that of Charles I. (A).

"But the turbulent ſpirit of the old times continued even to the preſent age. The heads of clans were by the diviſions, and a falſe policy that predominated in Scotland, during the reign of William III. flattered with an unreal importance; inſtead of being treated as bad ſubjects, they were courted as deſirable allies: inſtead of feeling the hand of power, money was allowed to bribe them into the loyalty of the times. They would have accepted the ſubſidies, notwithſtanding they deteſted the prince that offered them. They were taught to believe themſelves of ſuch conſequence, that in theſe days turned to their deſtruction. Two recent rebellions gave the legiſlature a late experience of the folly of permitting the feudal ſyſtem to exiſt in any part of its dominions. The act of 1748, for aboliſhing heritable juriſdictions, at once deprived the chieftains of all power of injuring the public by their commotions. Many of theſe *Reguli* ſecond this effort of legiſlature, and neglect no opportunity of rendering themſelves hateful to their unhappy vaſſals, the former inſtruments of their ambition."

Smollet's Mod. Hiſt. i. 430, &c.

"The ſituation of theſe iſlands in the great Atlantic Ocean renders the air cold and moiſt in the greater part of them. In the moſt northerly iſles, the ſun, at the ſummer ſolſtice, is not above an hour under the horizon at midnight, and not longer above it at mid-day in the depth of winter. The ſoil of the Hebrides varies alſo in different iſles, and in different parts of the ſame iſland: ſome are mountainous and barren, producing little elſe than heath, wild myrtle, fern, and a little graſs; while others, being cultivated and manured with ſea-weed, yield plentiful crops of oats and barley.

"Lead mines have been diſcovered in ſome of theſe iſlands, but not worked to much advantage; others have been found to contain quarries of marble, lime-ſtone, and free-ſtone; nor are they deſtitute of iron, talc, cryſtals, and many curious pebbles, ſome of which emulate the Braſilian topaz.

"With reſpect to vegetables, over and above the plentiful harveſts of corn that the natives earn from agriculture, and the pot-herbs and roots that are planted in gardens for the ſuſtenance of the people, theſe iſlands produce ſpontaneouſly a variety of plants and ſimples, uſed by the iſlanders in the cure of their diſeaſes; but there is hardly a ſhrub or tree to be ſeen, except in a very few ſpots, where ſome gentlemen have endeavoured to rear them with much more trouble than ſucceſs.

"The animals, both of the land and ſea, domeſtic and wild, quadrupeds, fowls, and fiſhes, found in and about theſe iſlands, are of the ſame ſpecies, ſize, and configuration, with thoſe of the ORKNEYS.

"The people inhabiting theſe iſlands are of the ſame race with thoſe who live in the Highlands of Scotland; ſpeak the ſame language, wear the ſame habit, and obſerve the ſame cuſtoms. [See the article HIGHLANDS.]

"The commodities which may be deemed the ſtaples of this country are black cattle, ſheep, and fiſh, which they ſell to their fellow-ſubjects of Scotland. Part of the wool they work up into knit-ſtockings, coarſe cloth, and that variegated ſtuff called *tartan*. They likewiſe ſalt mutton in the hide, and export it in boats or barklings to different parts of the main-land. Cod, ling, mackarel, whiting, haddock, and ſoles, are here caught in abundance, together with a ſmall red cod, remarkably voracious, of a very delicate flavour: there are likewiſe two kinds of white fiſh, which ſeem to be peculiar to this coaſt, known by the names of *lithe* and *cea*, eſteemed good eating. But the greateſt treaſure the ocean pours forth is the prodigious quantity of herrings,

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(A) In the beginning of the laſt century the iſlanders were continually haraſſing Ireland with their plundering invaſions, or landing there to ſupport rebellions; at length it was made treaſon to receive theſe Hebridian Redſhanks as they were ſtyled.

rings, which, at one ſeaſon of the year, ſwarm in all the creeks and bays along the weſtern ſhore of Scotland. Theſe are counted the largeſt, fatteſt, and fineſt herrings caught in any part of the northern ſeas. This fiſhery employs a great number of hands, and brings a conſiderable advantage to the kingdom. The fiſh are caught, cured, barrelled up, and exported: but whether from want of ſkill, or a proper ſalt for pickling, the Scotch-cured herrings of this coaſt, though ſuperior to all others in their natural ſtate, are counted inferior to thoſe which are dreſſed and pickled by the Dutch fiſhermen.

"How mean and contracted ſoever the commerce and produce of theſe iſlands may be at preſent, they are perhaps more capable of improvement in both articles than any part of the Britiſh dominions in Europe. The inhabitants are ſo little ſkilled in huſbandry, that the ſoil, though generally good in the low grounds, yields nothing but ſcanty crops of oats and barley; and great tracts of land lie altogether uncultivated. If a very ſmall number of judicious farmers would ſettle in ſome of the moſt conſiderable iſlands, they would ſoon raiſe ſuch harveſts as would enrich themſelves; employ and maintain all the idle people, a great number of whom are obliged to repair to foreign countries for ſubſiſtence; afford ſufficient bread for the inhabitants, and even ſupply the barren parts of the oppoſite continent. The ſoil in many places would produce wheat, and almoſt every where would give good paſturage, inſomuch that, with proper culture, the people might provide hay and fodder for their cattle, which during the ſeverity of the winter die in great numbers for want of proviſion. Improvements of this kind would be the more eaſily made, as the ſea-ſhore abounds with ſhells for lime and ſea-weeds for manure; and the labourers would be eaſily ſubſiſted by the fiſh that ſwarm not only in the ocean which ſurrounds theſe iſlands, but likewiſe in the numerous lakes and rivers of freſh water. Martin declares, that he knew 100 families in this country maintained by as many little farms, the rent of each not exceeding 5 s. one ſheep, and a few pecks of oats.

"The commerce of theſe iſlands might be extended in ſuch a manner as to render them a ſtaple of trade, and an excellent nurſery for ſeamen. They are furniſhed with an infinite number of bays, creeks, and harbours, for the convenience of navigation: the inhabitants are numerous, ſtrong, active, and every way qualified for the life of a mariner. The ſea affords myriads of fiſh for exportation: the lands might afford plenty of paſturage for black cattle, horſes, and ſheep, as well as plenteous harveſts of corn and other grain: woollen and linen manufactures might be proſecuted to great advantage, where labour is cheap and proviſions are reaſonable. The iſlands afford good ſtone and lime; and ſome parts of the oppoſite main-land, timber for building. They have plenty of fuel, not only for the ordinary purpoſes of life, but alſo for ſalt-pans, which might be erected on different parts of the coaſt; and for burning ſea-ware for the uſe of a glaſs or ſoap manufacture. Finally, the ſituation of theſe iſlands is ſo commodious for trade, that the navigator is immediately in the open ſea, and almoſt in the neighbourhood of Denmark, Sweden, Hamburgh, Holland; nay, with a favourable wind, he can reach the coaſts of France and Spain in a week's ſailing; if he is bound for the Britiſh plantations, or indeed for any part of the known globe, he is at once diſencumbered of the land, and proſecutes his voyage through the open ſea without obſtruction or difficulty."

To the neglected ſtate of theſe iſlands, and to their great importance in various natural reſpects, the attention of government has been called within theſe few years by the repreſentation and efforts of different patriotic noblemen and gentlemen, and a regular eſtabliſhment has been formed under the name of the Britiſh Society for extending the Fiſheries and improving the Sea-coaſts of the Kingdom; in conſequence of which many uſeful plans for the improvement of thoſe iſlands have been adopted, and are gradually carrying into execution.

New HEBRIDES, a cluſter of iſlands lying in the Great South Sea, or Pacific Ocean. The northern iſlands of this archipelago were firſt diſcovered by that great navigator Quiros in 1606, and not without reaſon conſidered as a part of the ſouthern continent, which at that time, and till very lately, was ſuppoſed to exiſt. They were next viſited by M. de Bougainville in 1768, who, beſides landing on the iſland of Lepers, did no more than diſcover that the land was not connected, but compoſed of iſlands, which he called the *Great Cyclades*. Captain Cook, beſides aſcertaining the extent and ſituation of theſe iſlands, added the knowledge of ſeveral in this group which were before unknown. He explored the whole cluſter; and thinking himſelf thereby intitled to affix to them a general appellation, he named them the *New Hebrides*. They are ſituated between latitudes of 14 deg. 25. min. and 20 deg. 4 min. ſouth; and between 166 deg. 41 min. and 170 deg. 21 min. eaſt longitude; and extend 125 leagues in the direction of north-north-weſt and ſouth-ſouth-eaſt. The moſt northern part of this archipelago was called by M. de Bouganville *the Peak of the Etoile*. The whole cluſter conſiſts of the following iſlands; ſome of which have received names from the different European navigators; others retain the names which they bear among the natives, *viz.* Tierra del Eſpiritu Santo, Mallicollo, St. Bartholomew, Iſle of Lepers, Aurora, Whitſuntide, Ambrym, Immer, Apee, Three Hills, Sandwich, Montagu, Hinchinbrook, Shepherd, Eorramanga, Irronan, Annatom, and Tanna.

HEBRON (anc. geog.), a very ancient city ſituated in the hilly country of the tribe of Judah to the ſouth. Its more ancient name was *Kiriath Arba*, or *Cariath Arba*. In antiquity this city vied with the moſt ancient cities of Egypt, being ſeven years prior to Zoan, tranſlated *Tanis* by the Seventy. Joſephus makes it not only older than Tanis, but even than Memphis. It ſtood to the weſt of the lake Aſphaltites, and was for ſome time the royal reſidence of David. After the captivity it fell into the hands of the Edomites, as did all the ſouth country of Judea. It is now called *Habroun*, ſituated ſeven leagues to the ſouth of Bethlehem. The Arabs call it *El-kalil*, "the well beloved;" which is the epithet they uſually apply to Abraham, whoſe ſepulchral grotto they ſtill ſhow. Habroun is ſeated at the foot of an eminence, on which are ſome wretched ruins, the miſhapen remains of an ancient caſtle. The adjacent country is a ſort of oblong hollow, five or ſix leagues in length, and not diſagreeably varied by rocky hillocks, groves of fir-trees, ſtunted oaks, and a few plantations of vines and olive trees. Theſe vineyards are not cultivated with a view to make wine, the inhabitants being ſuch zealous Mahometans as not to permit any Chriſtians to live among them: they are only of uſe to procure dried raiſins, which are badly prepared, though the grapes are of an excellent kind. The peaſants cultivate cotton likewiſe, which is ſpun by their wives, and ſold at Jeruſalem and Gaza. They have alſo ſome ſoap manufactories, the kali for which is ſold them by the Bedouins; and a very ancient glaſs-houſe, the only one in Syria. They make there a great quantity of coloured rings, bracelets for the wriſts and legs, and for the arms above the elbows, beſides a variety of other trinkets, which are ſent even to Conſtantinople. In conſequence of theſe manufactures, Mr Volney informs us, Habroun is the moſt powerful village in all this quarter; and is able to arm 800 or 900 men, who adhere to the faction Kaiſi, and are the perpetual enemies of the people of Bethlehem. This diſcord, which has prevailed throughout the country from the earlieſt times of the Arabs, cauſes a perpetual civil war. The peaſants are inceſſantly making inroads on each other's lands, deſtroying their corn, dourra, ſeſamum, and olive trees, and carrying off their ſheep, goats, and camels. The Turks, who are every where negligent in repreſſing ſimilar diſorders, are the leſs attentive to them here, ſince their authority is very precarious. The Bedouins, whoſe camps occupy the level country, are continually at open hoſtilities with them; of which the peaſants avail themſelves to reſiſt their authority, or do miſchief to each other, according to the blind caprice of their ignorance or the intereſt of the moment. Hence ariſes an anarchy which is ſtill more dreadful than the deſpotiſm which prevails elſewhere, while the mutual devaſtations of the contending parties render the appearance of this part of Syria more wretched than that of any other.

HEBRUS (anc. geog.), the largeſt river of Thrace, riſing from mount Scombrus; running in two channels till it comes to Philipopolis, where they unite. It empties itſelf at two mouths into the Ægean Sea, to the north of Samothrace. It was ſuppoſed to roll its waters upon golden ſands. The head of Orpheus was thrown into it after it had been cut off by the Ciconian women.

HECATE (fab. hiſt.), a daughter of Perſes and Aſteria, the ſame as Proſerpine or Diana. She was called Luna in heaven, Diana on earth, and Hecate or Proſerpine in hell; whence her name of *Diva triformis, tergemina, triceps*. She was ſuppoſed to preſide over magic and enchantments. She was generally repreſented like a woman, with the head of a horſe, a dog, or a boar; and ſometimes ſhe appeared with three different bodies, and three different faces, with one neck. Dogs, lambs, and honey, were generally offered to her, eſpecially in ways and croſs roads; whence ſhe obtained the name of *Trivia*. Her power was extended over heaven, the earth, ſea, and hell; and to her kings and nations ſuppoſed themſelves indebted for their proſperity.

HECATESIA, a yearly feſtival obſerved by the Stratonicenſians in honour of Hecate. The Athenians paid alſo particular worſhip to this goddeſs, who was deemed the patroneſs of families and of children. From this circumſtance the ſtatues of the goddeſs were erected before the doors of the houſes; and upon every new moon a public ſupper was always provided at the expence of the richeſt people, and ſet in the ſtreets, where the pooreſt of the citizens were permitted to retire and feaſt upon it, while they reported that Hecate had devoured it. There were alſo expiatory offerings, to ſupplicate the goddeſs to remove whatever evils might impend on the head of the public, &c.

HECATOMB, in antiquity, a ſacrifice of an hundred beaſts of the ſame kind, at an hundred altars, and by an hundred prieſts or ſacrificers. The word is formed of the Greek *εκατομβη*, which properly ſignifies a ſumptuous or magnificent ſacrifice.—Others derive it from the Greek εκατον *centum*, "a hundred," and βȣς *bos*, "bullock," &c.; on which footing the hecatomb ſhould be a ſacrifice of 100 bullocks.—Others derive the word from εκατον and πȣς *pes*, "foot;" and on that principle hold, that the hecatomb might conſiſt of only 25 four footed beaſts. They add, that it did not matter what kind of beaſts were choſen for victims, provided the quota of feet were but had.

Pythagoras is ſaid to have ſacrificed a hecatomb to the muſes of 100 oxen, in joy and gratitude for his diſcovering the demonſtration of the 47th propoſition of the firſt book of Euclid, *viz.* that in a rectangled triangle the ſquare of the hypothenuſe is equal to the ſquares of the two other ſides.

For the origin of hecatombs: Strabo relates, that there were 100 cities in Laconia, and that each city uſed to ſacrifice a bullock every year for the common ſafety of the country; whence the inſtitution of the celebrated ſacrifice of 100 victims called *hecatombs*. Others refer the origin of hecatombs to a plague, where-with the 100 cities of Peloponneſus were afflicted; for the removal whereof, they jointly contributed to ſo ſplendid a ſacrifice.

Julius Capitolinus relates, that for a hecatomb they erected 100 altars of turf, and on theſe ſacrificed 100 ſheep and 100 hogs. He adds, that when the emperors offered ſacrifices of this kind, they ſacrificed 100 lions, 100 eagles, and 100 other beaſts of the like kind.

HECATOMBÆON was the firſt month of the Athenian year, conſiſting of 30 days; beginning on the firſt new moon after the ſummer ſolſtice, and conſequently anſwering to the latter part of our June and the beginning of July. It had its name from the great number of hecatombs ſacrificed in it. See Hecatomb.

HECATOMPOLIS (anc. geog.), a ſurname of the iſland of Crete, from its 100 cities. The territory of Laconia alſo had anciently this name for the ſame reaſon; and the cuſtom of theſe 100 cities was to ſacrifice a hecatomb annually.

HECATOMPYLOS (anc. geog.), the metropolis of Parthia, and royal reſidence of Arſaces, ſituated at the ſprings of the Araxes. Thebes in Egypt had alſo the ſame name from its 100 gates.

HECK, an engine to take fiſh. A ſalmon heck is a grate for catching that ſort of fiſh.

HECKLE, among hemp-dreſſers. See Hatchel.

HECLA, a vulcano of Iceland, and one of the moſt furious in the world, ſituated on the ſouthern part of the iſland. See Iceland.

It was viſited in the year 1772 by Dr Von Troil, a

Swediſh gentleman along with Mr (now Sir Joſeph) Banks, Dr Solander, and Dr James Lind of Edinburgh. On their firſt landing they found a tract of land 60 or 70 miles in extent entirely ruined by lava, which appeared to have been in the higheſt ſtate of liquefaction. Having undertaken a journey to the top of the mountain, they travelled 300 or 360 miles over an uninterrupted tract of lava; and had at length the pleaſure of being the firſt who had arrived at the ſummit of the mountain.

Hecla, according to the account of theſe gentlemen, is ſituated in the ſouthern part of the iſland, about four miles from the ſea-coaſt, and is divided into three parts at the top, the middle point being the higheſt; and, according to an exact obſervation with Ramſelen's barometer, is 5000 feet above the level of the ſea. They were obliged to quit their horſes at the firſt opening from which the fire had burſt. They deſcribe this as a place with lofty glazed walls and high glazed cliffs, unlike any thing which they had ever ſeen before.

A little higher up they found a large quantity of grit and ſtones; and ſtill farther on another opening, which, though not deep, deſcended lower than that of the higheſt point. Here they imagined they plainly diſcerned the effects of boiling water; and not far from thence the mountain began to be covered with ſnow, excepting ſome ſpots which were bare. The reaſon of this difference they ſoon perceived to be the hot vapour aſcending from the mountain. As they aſcended higher they found theſe ſpots become larger; and about 200 yards below the ſummit, a hole about a yard and an half in diameter was obſerved, from whence iſſued ſo hot a ſteam, that they could not meaſure the degree of heat with the thermometer. The cold now began to be very intenſe; Fahrenheit's thermometer, which, at the foot of the mountain was at 52, now fell to 24; the wind alſo became ſo violent, that they were ſometimes obliged to lie down for fear of being blown down the moſt dreadful precipices. On the very ſummit they experienced at the ſame time a high degree of heat and cold; for, in the air, Fahrenheit's thermometer ſtood conſtantly at 24, but when ſet on the ground, roſe to 153; the barometer ſtood at 22.247. Though they were very much inclined to remain here for ſome time, it could by no means be done with ſafety; for which reaſon they were obliged to deſcend very quickly,

The mountain ſeems to be made up, not of lava, but of ſand, grit, and aſhes; which are thrown up with the ſtones partly diſcoloured, and partly melted with fire. Several ſorts of pumice ſtones were found on it, among which was one with ſome ſulphur. Sometimes the pumice was ſo much burnt, that it was as light as tow. Its form and colour was ſometimes very fine, but at the ſame time ſo ſoft, that it was difficult to remove it from one place to another. The common lava was found both in large pieces and ſmall bits; as likewiſe a quantity of black jaſper burned at the extremities, and reſembling trees and branches. Some ſlate of a ſtrong red colour was obſerved among the ſtones thrown out by the volcano. In one place the lava had taken the form of chimney-ſtacks half broken down.—As they deſcended the mountain they obſerved three openings. In one, every thing looked as red as brick; from another, the lava had flowed in a ſtream about 50 yards broad, and after proceeding for ſome way, had divided into three large branches. Further on they perceived an opening at the botttom of which was a mountain in form of a ſugar-loaf, in throwing up of which the fire appeared to have exhauſted itſelf.

We have already obſerved, that our travellers were the firſt who aſcended to the top of this mountain. The reaſon that no one before them had ever done ſo was partly founded in ſuperſtition, and partly the ſteepneſs and difficulty of the aſcent, which was greatly facilitated by an eruption in 1766. Moſt kinds of lava found in other volcanic countries are to be met with about Hecla, or other Iceland volcanoes; as the grey, dark perforated kind, ſimilar to the Derbyſhire loadſtone; the Iceland agate, pumex vitreus both the *niger* and *viridis*. Some have conjectured this to be the lapis obſideanus of the ancients, which they formed into ſtatues.

The lava is ſeldom found near the openings whence the eruptions proceed, but rather looſe grit and aſhes; and indeed the greater part of the Icelandic mountains conſiſt of this matter; which, when it is grown cold, generally takes an arched form. The upper cruſt frequently grows hard and ſolid, while the melted matter beneath it continues liquid. This forms great cavities, whoſe walls, bed, and roof, are of lava, and where great quantities of ſtalactite lava are found. There are a vaſt number of theſe caves in the iſland, ſome of which are very large, and are made uſe of by the inhabitants for ſheltering their cattle. The largeſt in the iſland is 5034 feet long, and from 50 to 54 in breadth, and between 34 and 36 in height.—There are ſome prodigious clefts left by the eruptions, the largeſt of which is called *Almeneggaa*, near the water of Tingalla, in the ſouthweſtern part of the iſland. It is 105 feet broad and very long. The direction of the chaſm itſelf is from north to ſouth. Its weſtern wall, from which the other has been perpendicularly divided, is 107 feet ſix inches in height, and conſiſts of many ſtrata, of about 10 inches each in height, of lava grown cold at different times. The eaſtern wall is only 45 feet four inches in height, and that part of it which is directly oppoſite to the higheſt part of the other ſide is no more than 36 feet 5 inches high.

HECTIC FEVER. See (the *Index* ſubjoined to) MEDICINE.

HECTOR, the ſon of Priam and Hecuba, and the father of Aſtyanax, is celebrated for the valour with which he defended the city of Troy againſt the Greeks. He was killed by Achilles, who dragged his body, faſtened to his chariot, thrice round the walls of Troy, and afterwards reſtored it to Priam for a large ranſom. See TROY.

HEDERA, IVY, in botany: A genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method giving name to the 46th order, *Hederaceæ*. There are five oblong petals; the berry is pentaſpermous, girt by the calyx.

Species. 1. The helix, or common ivy, grows naturally in many parts of Britain; and where it meets with any ſupport, will riſe to a great height, ſending out roots on every ſide, which ſtrike into the joints of walls or the bark of trees. If there is no ſupport, they trail on the ground, and take root all their length, ſo that they cloſely cover the ſurface, and are difficult to eradicate. While theſe ſtalks are fixed to any ſupport, or trail upon the ground, they are ſlender and flexible; but when they have reached to the top of their ſupport, they ſhorten and become woody, forming themſelves into large buſhy heads, and their leaves are larger, more of an oval ſhape, and not divided into lobes like the lower leaves, ſo that it hath a quite different appearance. There are two varieties of this ſpecies, one with ſilver-ſtriped leaves, the other with yellowiſh leaves on the tops of the branches; and theſe are ſometimes admitted into gardens. 2. The quinquefolia, or Virginia creeper, is a native of all the northern parts of America. It was firſt carried to Europe from Canada; and has been long cultivated in the Britiſh gardens, chiefly to plant againſt walls or buildings to cover them: which theſe plants will do in a ſhort time; for they will ſhoot almoſt 20 feet in one year, and will mount up to the top of the higheſt building: but as the leaves fall off in autumn, the plants make but an indifferent appearance in winter, and therefore are proper only for ſuch ſituations as will not admit of better plants; for this will thrive in the midſt of cities, and is not injured by ſmoke or the cloſeneſs of the air.

Culture. The firſt ſpecies is eaſily propagated by its trailing branches, and will thrive in almoſt any ſoil or ſituation. The ſecond may be propagated by cuttings; which if planted in autumn in a ſhady border will take root, and by the following autumn will be fit to plant in thoſe places where they are deſigned to remain.

Uſes. The roots of the ivy are uſed by leather-cutters to whet their knives upon. Apricots and peaches covered with ivy during the month of February, have been obſerved to bear fruit plentifully. The leaves have a nauſeous taſte; Haller ſays, they are given to children in Germany as a ſpecific for the atrophy. The common people of England apply them to iſſues; and an ointment made from them is in great eſteem among the Highlanders of Scotland as a ready cure for burns. The berries have a little acidity. When fully ripe, a doſe of them has been recommended in the plague. In warm climates, a reſinous juice exſudes from the ſtalks, which is ſaid to be a powerful reſolvent and diſcutient, and an excellent ingredient in plaſters and ointments adapted for thoſe purpoſes. Horſes and ſheep eat the plant; goats and cows refuſe it.—Caſpar Bauhine and Tournefort mention a ſort of ivy that grows in many of the iſlands of the Archipelago, to which they have given the name of the *poet's ivy*, becauſe the ancients are ſaid to have made crowns of this plant for adorning the brows of their poets. By others it is called *hedera dyonyſias*, becauſe they made uſe of the ſame ſort of ivy in their public rejoicings and feaſts in honour of Bacchus. The berries are of a fine gold colour, whence this ſpecies has been termed by others *chryſocarpos*.

HEDERACEÆ, (from *hedera* "ivy") The name of the 46th order in Linnæus's fragments of a natural method, conſiſting of ivy, and a few other genera, which from their general habit and appearance ſeem nearly allied to it. See BOTANY, p. 468.

HEDGES, in agriculture, are either planted to make fences round incloſures, or to divide the ſeveral parts of a garden. When they are deſigned as outward fences, they are planted either with hawthorn, crabs, or black-thorn: but thoſe hedges which are planted in gardens, either to ſurround wilderneſs-quarters, or to ſcreen the other parts of a garden from ſight, are planted according to the fancy of the owner; ſome preferring ever-greens, in which caſe the holly is beſt; next the yew, then the laurel, lauruſtinus, phyllyrea, &c. Others prefer the beech, the hornbeam, and the elm.

1 General directions for planting hedges.

Before planting, it is proper to conſider the nature of the land, and what ſort of plants will thrive beſt in it; and alſo, what is the ſoil from whence the plants are to be taken. As for the ſize, the ſets ought to be about the thickneſs of one's little finger, and cut within about four or five inches of the ground; they ought to be freſh taken up, ſtraight, ſmooth, and well rooted. Thoſe plants that are raiſed in the nurſery are to be preferred.

In planting outſide hedges, the turf is to be laid, with the graſs ſide downwards, on that ſide of the ditch the bank is deſigned to be made; and ſome of the beſt mould ſhould be laid upon it to bed the quick, which is to be ſet upon it a foot aſunder. When the firſt row of quick is ſet, it muſt be covered with mould; and when the bank is a foot high, you may lay another row of ſets againſt the ſpaces of the former, and cover them as you did the others: the bank is then to be topped with the bottom of the ditch, and a dry or dead-hedge laid, to ſhade and defend the under-plantation. Stakes ſhould then be driven into the looſe earth, ſo low as to reach the firm ground: theſe are to be placed at about two feet and an half diſtance: and in order to render the hedge yet ſtronger, you may edder it, that is, bind the top of the ſtakes with ſmall long poles, and when the eddering is finiſhed, drive the ſtakes anew.

2 Of managing the hawthorn,

The quick muſt be kept conſtantly weeded, and ſecured from being cropped by cattle; and in February it will be proper to cut it within an inch of the ground, which will cauſe it ſtrike root afreſh, and help it much in the growth.

3 Of the crab

The crab is frequently planted for hedges; and if the plants are raiſed from the kernels of the ſmall wild crabs, they are much to be preferred to thoſe raiſed from the kernels of all ſorts of apples without diſtinction; becauſe the plants of the true ſmall crab never ſhoot ſo ſtrong as thoſe of the apples, and may therefore be better kept within the proper compaſs of an hedge.

4 Black thorn.

The black-thorn, or ſloe, is frequently planted for hedges: and the beſt method of doing it, is to raiſe the plants from the ſtones of the fruit, which ſhould be ſown about the middle of January, if the weather will permit, in the place where the hedge is intended; but when they are kept longer out of the ground, it will be proper to mix them with ſand, and keep them in a cool place. The ſame fence will do for it when ſown, as when it is planted.

5 Holly,

The holly is ſometimes planted for hedges; but where it is expoſed, there will be great difficulty in preventing its being deſtroyed: otherwiſe, it is by far the moſt beautiful plant; and, being an ever-green, will afford much better ſhelter for cattle in winter than any other ſort of hedge. The beſt method of raiſing theſe hedges, is to ſow the ſtones in the place where the hedge is intended; and, where this can be conveniently done, the plants will make a much better progreſs than thoſe that are tranſplanted: but theſe berries ſhould be buried in the ground ſeveral months before they are ſown. The way to do this, is to gather the berries about Chriſtmas, when they are uſually ripe, and put them into large flower-pots, mixing ſome ſand with them; then dig holes in the ground, into which the pots muſt be ſunk, covering them over with earth, about ten inches thick. In this place they muſt remain till the following October, when they ſhould be taken up, and ſown in the place where the hedge is intended to be made. The ground ſhould be well trenched, and cleared from the roots of all bad weeds, buſhes, trees, &c. Then two drills ſhould be made, at about a foot diſtance from each other, and about two inches deep, into which the ſeeds ſhould be ſcattered pretty cloſe, leſt ſome ſhould fail. When the plants grow up, they muſt be carefully weeded: and if they are deſigned to be kept very neat, they ſhould be cut twice a year, that is in May and in Auguſt; but if they are only deſigned for fences, they need only be ſheered in July. The fences for theſe hedges, while young, ſhould admit as much free air as poſſible: the beſt ſort are thoſe made with poſts and rails, or with ropes drawn through holes made in the poſts; and if the ropes are painted over with a compoſition of melted pitch, brown Spaniſh colour and oil, well mixed, they will laſt ſeveral years.

6
Of garden hedges.

Hedges for ornament in gardens are ſometimes planted with ever-greens, in which caſe the holly is preferable to any other: next to this, moſt people prefer the yew; but the dead colour of its leaves renders thoſe hedges leſs agreeable. The laurel is one of the moſt beautiful ever-greens; but the ſhoots are ſo luxuriant that it is difficult to keep it in any tolerable ſhape; and as the leaves are large, to prevent the diſagreeable appearance given them by their being cut through with the ſheers, it will be the beſt way to prune them with a knife, cutting the ſhoots juſt down to a leaf. The lauruſtinus is a very fine plant for this purpoſe; but the ſame objection may be made to this as to the laurel: this, therefore, ought only to be pruned with a knife in April, when the flowers are going off; but the new ſhoots of the ſame ſpring muſt by no means be ſhortened. The ſmall leaved and rough-leaved lauruſtinus are the beſt plants for this purpoſe. The true phillyrea is the next beſt plant for hedges, which may be held up to the height of 10 or 12 feet; and if they are kept narrow at the top, that there may be not too much width for the ſnow to lodge upon them, they will be cloſe and thick, and make a fine appearance. The ilex, or ever-green oak, is alſo planted for hedges, and is a fit plant for thoſe deſigned to grow very tall.—The deciduous plants uſually planted to form hedges in gardens are, The hornbeam, which may be kept neat with leſs trouble than moſt other plants. The beech, which has the ſame good qualities as the hornbeam; but the gradual falling of its leaves in winter cauſes a continual litter. The ſmall-leaved Engliſh elm is a proper tree for tall hedges, but theſe ſhould not be planted cloſer than eight or ten feet. The lime-tree has alſo been recommended for the ſame purpoſe; but after they have ſtood ſome years, they grow very thin at bottom, and their leaves frequently turn of a black diſagreeable colour.

7
Of flowering ſhrubs.

Many of the flowering ſhrubs have alſo been planted in hedges, ſuch as roſes, honeyſuckles, ſweet-briar, &c. but theſe are difficult to train: and if they are cut to bring them within compaſs, their flowers, which are their greateſt beauty, will be entirely deſtroyed. A correſpondent of the ſociety for improving agriculture in Scotland, however, informs us, that he tried with ſucceſs, the eglantine, ſweet-briar, or dog-roſe, when all the methods of making hedges practiſed in Eſſex and Hampſhire had been tried in vain. His method was to gather the hips of this plant, and to lay them in a tub till March; the ſeeds were then eaſily rubbed out; after which they were ſowed in a piece of ground prepared for garden peas. Next year they came up; and the year after they were planted in the following manner. After marking out the ditch, the plants were laid about 18 inches aſunder upon the ſide graſs, and their roots covered with the firſt turfs that were taken off from the ſurface of the intended ditch. The earth ſide of theſe turfs was placed next to the roots, and other earth laid upon the turfs which had been taken out of the ditch. In four or five years theſe plants made a fence which neither horſes nor cattle of any kind could paſs. Even in two or three years none of the larger cattle will attempt a fence of this kind. Sheep indeed will ſometimes do ſo, but they are always entangled to ſuch a degree, that they would remain there till they died unleſs relieved. Old briars dug up and planted ſoon make an excellent fence; and, where thin, it may be eaſily thickened by laying down branches, which in one year will make ſhoots of ſix or ſeven feet. They bear clipping very well.

8
Dr Anderſon's directions.

Dr Anderſon, who hath treated the ſubject of hedging very particularly, is of opinion, that ſome other plants beſides thoſe abovementioned might be uſefully employed in the conſtruction of hedges. Among theſe he reckons the common willow. This, he ſays, by no means requires the wetneſs of ſoil which is commonly ſuppoſed. "It is generally imagined (ſays he), that the willow can be made to thrive no where except in wet or boggy ground: but this is one of thoſe vulgar errors, founded upon inaccurate obſervation, too often to be met with in ſubjects relating to rural affairs; for experience has ſufficiently convinced me, that this plant will not only grow, but thrive, in any rich well-cultivated ſoil (unleſs in particular circumſtances that need not here be mentioned), even although it be of a very dry nature. It could not, however, in general be made to thrive, if planted in the ſame manner as thorns; nor would it in any reſpect, be proper to train it up for a fence in the ſame way as that plant.

Eſſays on Agriculture, i. 54, &c.

9
Of the willow.

The willow, as a fence, could ſeldom be ſucceſsfully employed, but for dividing into ſeparate incloſures any extenſive field of rich ground: and, as it is always neceſſary to put the ſoil into as good order as poſſible before a hedge of this kind is planted in it, the eaſieſt method of putting it into the neceſſary high tilth, will be to mark off the boundaries of your ſeveral fields in the winter, or early in the ſpring, with a deſign to give a complete fallow to a narrow ridge, ſix or eight feet broad, in the middle of which the hedge is intended to be planted the enſuing winter. This ridge ought to be frequently ploughed during the ſummer-ſeaſon, and in autumn to be well manured with dung or lime, or both (for it cannot be made too rich), and be neatly formed into a ridge before winter.

“ Having prepared the ground in this manner, it will be in readineſs to receive the hedge, which ought to be planted as early in winter as can be got conveniently done; as the willow is much hurt by being planted late in the ſpring. But before you begin to make a fence of this kind, it will be neceſſary to provide a ſufficient number of plants: which will be done by previouſly rearing them in a nurſery of your own, as near the field to be incloſed as you can conveniently have it; for as they are very bulky, the carriage of them would be troubleſome if they were brought from any conſiderable diſtance. The beſt kinds of willow for this uſe, are ſuch as make the longeſt and ſtrongeſt ſhoots, and are not of a brittle nature. All the large kinds of hoop willows may be employed for this uſe; but there is another kind with ſtronger and more taper ſhoots, covered with a dark green bark when young, which, upon the older ſhoots, becomes of an aſh-gray, of a firm texture, and a little rough to the touch. The leaves are not ſo long, and a great deal broader than thoſe of the common hoop-willow, pretty thick, and of a dark-green colour. What name this ſpecies is uſually known by, I cannot tell; but as it becomes very quickly of a large ſize at the root, and is ſtrong and firm, it ought to be made choice of for this purpoſe in preference to all other kinds that I have ſeen. The ſhoots ought to be of two or three years growth before they can be properly uſed, and ſhould never be leſs than eight or nine feet in length. Theſe ought to be cut over cloſe by the ground immediately before planting, and carried to the field at their whole length. The planter having ſtretched a line along the middle of the ridge which was prepared for their reception, begins at one end thereof, thruſting a row of theſe plants firmly into the ground, cloſe by the ſide of the line, at the diſtance of 18 or 20 inches from one another; making them all ſlaunt a little to one ſide in a direction parallel to the line. This being finiſhed, let him begin at the oppoſite end of the line, and plant another row in the intervals between the plants of the former row; making theſe incline as much as the others, but in a direction exactly contrary; and then, plaiting theſe baſket-ways, work them into lozenges like a net, faſtening the tops by plaiting the ſmall twigs with one another, which with very little trouble may be made to bind together very firmly. The whole, when finiſhed aſſumes a very beautiful net-like appearance, and is even at firſt a tolerable good defence: and, as theſe plants immediately take root and quickly increaſe in ſize, it becomes, after a few years, a very ſtrong fence which nothing can penetrate. This kind of hedge I myſelf have employed; and find that a man may plant and twiſt properly about a hundred yards in a day, if the plants be laid down to his hand: and, in a ſituation ſuch as I have deſcribed, I know no kind of fence which could be reared at ſuch a ſmall expence, ſo quickly become a defence, and continue ſo long in good order. But it will be greatly improved by putting a plant of elegantine between each two plants of willow, which will quickly climb up and be ſupported by them; and, by its numerous prickles would effectually preſerve the defenceleſs willow from being browſed upon by cattle.

“ As it will be neceſſary to keep the narrow ridge, upon which the hedge is planted, in culture for one year at leaſt, that the plants of eleganti̇ne may not be choked by weeds, and that the roots of the willow may be allowed to ſpread with the greater eaſe in the tender mold produced by this means, it will be proper to ſtir the earth once or twice by a gentle horſe-hoe in the beginning of ſummer; and, in the month of June, it may be ſowed with turnips or planted with coleworts, which will abundantly repay the expence of the fallow.”

10
Of planting hedges in expoſed ſituations, and recovering them when decayed.
Vol. II. p, 16, &c,

The ſame author alſo gives the following uſeful directions for planting the hedges in ſituations very much expoſed to the weather, and recovering them when on the point of decaying. “ Thoſe who live in an open uncultivated country, have many difficulties to encounter, which others who inhabit more warm and ſheltered regions never experience; and, among theſe difficulties, may be reckoned that of hardly getting hedges to grow with facility. For, where a young hedge is much expoſed to violent and continued guſts of wind, no art will ever make it riſe with ſo much freedom, or grow with ſuch luxuriance, as it would do in a more ſheltered ſituation and favourable expoſure.

“ But although it is impoſſible to rear hedges in this ſituation to ſo much perfection as in the others, yet they may be reared even there, with a little attention and pains, ſo as to become very fine fences.

“ It is adviſable in all caſes, to plant the hedges upon the face of a bank; but it becomes abſolutely neceſſary in ſuch an expoſed ſituation as that I have now deſcribed: for the bank, by breaking the force of the wind, ſcreens the young hedge from the violence of the blaſt, and allows it to advance, for ſome time at firſt, with much greater luxuriance than it otherwiſe could have done.

“ But as it may be expected ſoon to grow as high as the bank, it behoves the provident huſbandman to prepare for that event, and guard, with a wiſe forecaſt againſt the inconvenience that may be expected to ariſe from that circumſtance.

“ With this view, it will be proper for him, inſtead of making a ſingle ditch, and planting one hedge, to raiſe a pretty high bank, with a ditch on each ſide of it, and a hedge on each face of the bank; in which ſituation, the bank will equally ſhelter each of the two hedges while they are lower than it; and, when they at length become as high as the bank, the one hedge will in a manner afford ſhelter to the other, ſo as to enable them to advance with much greater luxuriance than either of them would have done ſingly.

“ To effectuate this ſtill more perfectly, let a row of ſervice-trees be planted along the top of the bank, at the diſtance of 18 inches from each other, with a plant of eglantine between each two ſervices. This plant will advance, in ſome degree, even in this expoſed ſituation; and by its numerous ſhoots, covered with large leaves, will effectually ſcreen the hedge on each ſide of it, which, in its turn, will receive ſome ſupport and ſhelter from them; ſo that they will be enabled to advance all together, and form, in time, a cloſe, ſtrong, and beautiful fence.

“ The *ſervice* is a tree but little known in Scotland;

although it is one of thoſe that ought perhaps to be often cultivated there in preference to any other tree whatever, as it is more hardy, and, in an expoſed ſituation, affords more ſhelter to other plants than almoſt any other tree I know: for it ſends out a great many ſtrong branches from the under part of the ſtem, which, in time, aſſume an upright direction and continue to advance with vigour, and carry many leaves to the very bottom, almoſt as long as the tree exiſts; ſo that if it is not pruned, it riſes a large cloſe buſh, till it attains the height of a foreſt tree.

"It is of the ſame genus with the rawn-tree—and has a great reſemblance to it both in flower and fruit; its branches are more waving and pliant—its leaves undivided, broad and round, ſomewhat reſembling the elm, but white and mealy on the upper ſide. It deſerves to be better known that it is at preſent.

"But if, from the poorneſs of the ſoil in which your hedge is planted, or from any other cauſe, it ſhould ſo happen, that, after a few years, the hedge becomes ſickly, and the plants turn poor and ſtinted in appearance, the eaſieſt and only effectual remedy for that diſeaſe, is to cut the ſtems of the plants clean over, at the height of an inch or two above the ground; after which they will ſend forth much ſtronger ſhoots than they ever would have done without this operation. And if the hedge be kept free of weeds, and trained afterwards in the manner above deſcribed, it will, in almoſt every caſe, be recovered, and rendered freſh and vigorous.

"This amputation ought to be performed in autumn, or the beginning of winter; and in the ſpring when the young buds begin to ſhow themſelves, the ſtumps ought to be examined with care, and all the buds be rubbed off, excepting one or two of the ſtrongeſt and beſt placed, which ſhould be left for a ſtem. For if the numerous buds that ſpring forth round the ſtem are allowed to ſpring up undiſturbed, they will become in a few years as weak and ſtinted as before; and the hedge will never afterwards be able to attain any conſiderable height, ſtrength, or healthfulneſs.—I have ſeen many hedges, that have been repeatedly cut over totally ruined by this circumſtance not having been attended to in proper time.

"If the ground for 16 or 20 feet on each ſide of the hedge be fallowed at the time that this operation is performed, and get a thorough dreſſing with rich manures, and be kept in high order for ſome years afterwards by good culture and meliorating crops, the hedge will proſper much better than if this had been omitted, eſpecially if it has been planted on the level ground, or on the bank of a ſhallow ditch."

11
Of the black alder.

Mr Miller greatly recommends the black alder as ſuperior to any other that can be employed in moſt ſoils. It may either be propagated by layers or truncheons about three feet long. The beſt time for planting theſe laſt is in February or the month of March. They ought to be ſharpened at their largeſt end, and the ground well looſened before they are thruſt into it, leſt the bark ſhould be torn off, which might occaſion their miſcarriage. They ſhould be ſet at leaſt two feet deep, to prevent their being blown out of the ground by violent winds after they have made ſtrong ſhoots; and they ſhould be kept clear of tall weeds until they have got good heads, after which they will require no farther care. When raiſed by laying down the branches, it ought to be done in the month of October; and by that time twelvemonth they will have roots ſufficient for tranſplanting, which muſt be done by digging a hole and looſening the earth in the place where the plant is to ſtand. The young ſets muſt be planted at leaſt a foot and a half deep; and their top ſhould be cut off to within about nine inches of the ground; by which means they will ſhoot out many branches. This tree may be trained into very thick and cloſe hedges, to the height of 20 feet and upwards. It will thrive exceedingly on the ſides of brooks; for it grows beſt when part of its roots are in water; and may, if planted there, as is uſual for willows, be cut for poles every fifth or ſixth year. Its wood makes excellent pipes and ſtaves; for it will laſt a great while under ground or in water: and it is likewiſe in great eſtimation among ploughwrights, turners, &c. as well as for making ſeveral of the utenſils neceſſary for agriculture. Its bark alſo dyes a good black.

12
Of the birch.

The birch is another tree recommended by Mr Miller as proper for hedges; and in places where the young plants can be eaſily procured, he ſays that the plantation of an acre will not coſt 40 ſhillings: the after expence will not exceed 20 ſhillings; ſo that the whole will not come to above three pounds. Aſh-trees ought never to be permitted in hedges, both becauſe they injure the corn and graſs by their wide extended roots, and likewiſe on account of the property their leaves have of giving a rank taſte to butter made from the milk of ſuch cattle as feed upon the leaves. No aſh-trees are permitted to grow in the good dairy-counties.

13
Of hedges raiſed on the top of ſtones.

Where there are plenty of rough flat ſtones, the fences which bound an eſtate or farm are frequently made with them. In Devonſhire and Cornwall it is common to build as it were two walls with theſe ſtones laid upon one another; firſt two and then one between: as the walls riſe they fill the intermediate ſpace with earth, beat the ſtones in flat to the ſides, which makes them lie very firm, and ſo proceed till the whole is raiſed to the intended height. Quick hedges, and even large timber trees, are planted upon theſe walls, and thrive extremely well. Such incloſures are reckoned the beſt defence that can be had for the ground and cattle; though it can ſcarce be ſuppoſed but they muſt be diſagreeable to the eye, and ſtand in need of frequent repairs by the ſtones being forced out of the way by cattle. The beſt way to prevent this is to build ſuch wall in the bottom of a ditch made wide enough on purpoſe, and ſloped down on each ſide. Thus the deformity will be hid; and as the cattle cannot ſtand to face the wall ſo as to attempt to leap over it, the ſtones of which it is compoſed will be leſs liable to be beaten down. The earth taken out of the ditch may be ſpread on the adjacent ground, and its ſides planted with ſuch trees or underwood as will beſt ſuit the ſoil. By leaving a ſpace of ſeveral feet on the inſide for timber, a ſupply of that valuable commodity may be had without doing any injury to the more valuable paſture.

14
Method of conſtructing an excellent fence in graſſy places.

The following is an excellent method of making a durable and beautiful fence in graſſy places. Dig pieces of turf four or five inches thick, the breadth of the ſpade, and about a foot in length. Lay theſe turfs even by a line on one ſide, with the graſs outward, at the diſtance of ten or twelve inches within the mark at which the ditch afterwards to be dug in the ſolid ground is to begin. Then lay, in the ſame manner, but with their graſs ſides turned out the contrary way, another row of turf, at ſuch a diſtance as to make a breadth of foundation proportioned to the intended height of the bank. Thus, even though the ground ſhould prove defective, the bank would be prevented from giving way. A ditch may then be dug of what depth and breadth you pleaſe; or the ground may be lowered with a ſlope on each ſide; and in this caſe there will be no loſs of paſture by the fence; becauſe it may be ſowed with hay-ſeeds, and will bear graſs on both ſides. Part of the earth taken out of the ditches or ſlopes will fill the chaſm between the rows of turf, and the reſt may be ſcattered over the adjacent ground. Three, four, or more layers of turf, may be thus placed upon one another, and the interval between them filled up as before till the bank is brought to its deſired height; only obſerving to give each ſide of it a gentle ſlope for greater ſtrength. The top of this bank ſhould be about two feet and a half wide, and the whole of it filled up with earth except a ſmall hollow in the middle to retain ſome rain. Quickſets ſhould then be planted along this top, and they will ſoon form an admirable hedge. By this means a bank four feet high, and a ſlope only two feet deep, will make, beſides the hedge, a fence ſix feet high, through which no cattle will be able to force their way: for the roots of the graſs will bind the turf ſo together, that in one year's time it will become entirely ſolid; and it will yet be much ſtronger when the roots of the quick ſhall have ſhot out among it. The only precautions neceſſary to be obſerved in making this bank are, 1. Not to make it when the ground is too dry; becauſe, if a great deal of wet ſhould ſuddenly follow, it will ſwell the earth ſo much as perhaps to endanger the falling of ſome of the outſide: which, however, is eaſily remedied if it ſhould happen. 2. If the ſlope be ſuch as ſheep can climb up, ſecure the young quicks, at the time of planting them, by a ſmall dead hedge, either on or near the top, on both ſides. If any of the quicks ſhould die, which they will hardly be more apt to do in this than in any other ſituation, unleſs perhaps in extremely dry ſeaſons, they may be renewed by ſome of the methods already mentioned.—Such fences will anſwer even for a park; eſpecially if we place poſts and rails about two feet high, a little ſloping over the ſide of the bank, on or near its top: no deer can creep through this, nor even be able to jump over it. It is likewiſe one of the beſt fences for ſecuring cattle; and if the quicks on the bank be kept clipped, it will form a kind of green wall pleaſing to the eye.

15
Elms recommended.

In the firſt volume of the Bath Papers we find elms recommended for fences; and the following method of raiſing them for this purpoſe is ſaid to be the beſt. When elm timber is felled in the ſpring, ſow the chips made in trimming or hewing them green, on a piece of ground newly ploughed, as you would corn, and harrow them in. Every chip which has an eye, or bud-knot, or ſome bark on it, will immediately ſhoot like the cuttings of potatoes; and the plants thus raiſed having no tap-roots, but ſhooting their fibres horizontally in the richeſt part of the ſoil, will be more vigorous, and may be more ſafely and eaſily tranſplanted, than when raiſed from ſeeds, or in any other method. The plants thus raiſed for elm fences have greatly the advantage of others; as five, ſix, and ſometimes more, ſtems will ariſe from the ſame chip; and ſuch plants, if cut down within three inches of the ground, will multiply their ſide ſhoots in proportion, and make a hedge thicker, without running to naked wood, than by any other method yet practiſed. If kept clipped for three or four years, they will be almoſt impenetrable.

16
Obſervations on quick hedges.

In the ſecond volume of the ſame work, we meet with ſeveral obſervations on quick-hedges by a gentleman near Bridgewater. He prefers the white and black thorns to all other plants for this purpoſe; but is of opinion, that planting timber-trees in them at proper intervals is a very eligible and proper method. He raiſed ſome of his plants from haws in a nurſery; others he drew up in the woods, or wherever they could be found. His banks were flat, and three feet wide at the top, with a ſloping ſide next the ditches, which laſt were dug only two feet below the ſurface, and one foot wide at bottom. The turfs were regularly laid, with the graſs downwards, on that ſide of the ditch on which the hedge was to be raiſed, and the beſt of the mould laid at top. The ſets were ſtraight, long, ſmooth, and even growing ones, planted as ſoon as poſſible after taking up. They were planted at a foot diſtance; and about every 40 feet young fruit-trees or thoſe of other kinds, ſuch as aſh, oak, elm, beech, as the ſoil ſuited them. A ſecond row of quickſets were then laid on another bed of freſh earth at the ſame time, and covered with good mould; after which the bank was finiſhed and ſecured properly from injuries by a dead hedge well wrought together, and faſtened by ſtakes of oak-trees on the top of the bank at three feet diſtance. Wherever any of the quickſets had failed or were of a dwindling appearance, he had them replaced with freſh ones from the nurſery: as well as ſuch of the young trees as had been planted on the top of the bank, and cleared the whole from weeds. Thoſe moſt deſtructive to young hedges are the white and black bryony, bindweed, and the traveller's joy. The root of white bryony is as big as a man's leg, and runs very deep: that of black bryony often grows to 30 feet long, and with a kind of tendrils takes hold of the root of the young quick, and chokes it. This root muſt be dug very deep in order to deſtroy it. The third is ſtill more deſtructive to young quicks than the other two, overſhadowing the hedge like an arbour. Its root is ſmaller than that of the two former, but muſt be dug out very clean, as the leaſt piece left will ſend up freſh ſhoots. It is very deſtructive to hedges to allow cattle to browze upon them, which they are very apt to do; but where cattle of ſome kind muſt be allowed acceſs to them, horſes will do by far the leaſt miſchief.

17
Cider fruit-trees recommended in hedges.

With regard to the advantage ariſing from hedges, our author obſerves, that "if they were of no farther uſe than as mere fences, it would be the farmer's intereſt to keep them up carefully; for the better they are, the more ſecure are his cattle and crops. But if a judicious mixture of cider fruit-trees were planted in hedges, the profit ariſing from them only would abundantly repay the coſt of the whole without any loſs of ground. It may poſſibly be objected by ſome, that the hedges would often be hurt by the boys climbing up to get the fruit; but thoſe who make it ſhould remember, or be told, that the beſt kinds of cider-fruit are ſo hard and auſtere at the time of their being gathered, that nobody can eat them, and even hogs will hardly touch them. But the greateſt benefit, where no fruit trees are planted, ariſes from the thorns and wood which quick hedges yield for the fire and other purpoſes."

18 Method of raiſing hornbeam hedges in Germany.

The author of the Eſſays on Huſbandry recommends the hornbeam plant as one of the beſt yet known for making fences, according to the method practiſed in Germany, where ſuch fences are common. "When the German huſbandman (ſays he) erects a fence of this nature, he throws up a parapet of earth, with a ditch on each ſide, and plants his hornbeam ſets in ſuch a manner, that every two plants may be brought to interſect each other in the form of St Andrew's croſs. In that part where the two plants croſs each other, he gently ſcrapes off the bark, and binds them with ſtraw thwart-wiſe. Here the two plants conſolidate in a kind of indiſſoluble knot, and puſh from thence horizontal ſlanting ſhoots, which form a ſort of living paliſado or *Chevaux de friſe*; ſo that ſuch a protection may be called a rural fortification. The hedges being pruned annually, and with diſcretion, will in a few years render the fence impenetrable in every part.

19 Dr Anderſon's method of mending decayed hedges.

"It ſometimes happens (ſays Dr Anderſon) that a hedge may have been long neglected, and be in general in a healthy ſtate, but full of gaps and openings, or ſo thin and ſtraggling, as to form but a very imperfect ſort of fence. On theſe occaſions, it is vain to hope to fill up the gaps by planting young quicks; for theſe would always be outgrown, choaked, and ſtarved, by the old plants: nor could it be recovered by cutting clear over by the roots, as the gaps would ſtill continue where they formerly were. The only methods that I know of rendering this a fence are, either to mend up the gaps with dead wood, or to *plaſh* the hedge; which laſt operation is always the moſt eligible where the gaps are not too large to admit of being cured by this means.

"The operation I here call *plaſhing*, may be defined, 'a wattling made of living wood." To form this, ſome ſtems are firſt ſelected, to be left as ſtakes at proper diſtances, the tops of which are all cut over at the height of four feet from the root. The ſtraggling ſide-branches of the other part of the hedge are alſo lopped away. Several of the remaining plants are then cut over cloſe by the ground, at convenient diſtances; and the remaining plants are cut perhaps half through, ſo as to permit them to be bent to one ſide. They are then bent down almoſt to a horizontal poſition, and interwoven with the upright ſtakes, ſo as to retain them in that poſition. Care ought to be taken, that theſe be laid very low at thoſe places where there were formerly gaps; which ought to be farther ſtrengthened by ſome dead ſtakes or truncheons of willows, which will frequently take root in this caſe, and continue to live. And ſometimes a plant of eglantine will be able to overcome the difficulties it there meets with, ſtrike root, and grow up ſo as to ſtrengthen the hedge in a moſt effectual manner.

"The operator begins at one end of the field, and proceeds regularly forward, bending all the ſtems in one direction, ſo that the points riſe above the roots of the others, till the whole wattling is completed to the ſame height as the uprights.

"An expert operator will perform this work with much greater expedition than one who has not ſeen it done could eaſily imagine. And as all the diagonal wattlings continue to live and ſend out ſhoots from many parts of their ſtems, and as the upright ſhoots that riſe from the ſtumps of thoſe plants that have been cut over quickly ruſh up through the whole hedge, theſe ſerve to unite the whole into one entire maſs, that forms a ſtrong, durable, and beautiful fence.

"This is the beſt method of recovering an old neglected hedge that hath as yet come to my knowledge.

"In ſome caſes it happens that the young ſhoots of a hedge are killed every winter; in which caſe it ſoon becomes dead and unſightly, and can never riſe to any conſiderable height. A remedy for this diſeaſe may therefore be wiſhed for.

"Young hedges are obſerved to be chiefly affected with this diſorder; and it is almoſt always occaſioned by an injudicious management of the hedge, by means of which it has been forced to ſend out too great a number of ſhoots in ſummer, that are thus rendered ſo ſmall and weakly as to be unable to reſiſt the ſevere weather in winter.

"It often happens that the owner of a young hedge, with a view to render it very thick and cloſe, cuts it over with the ſhears a few inches above the ground the firſt winter after planting; in conſequence of which, many ſmall ſhoots ſpring out from each of the ſtems that has been cut over:—Each of which, being afterwards cut over in the ſame manner, ſends forth a ſtill greater number of ſhoots, which are ſmaller and ſmaller in proportion to their number.

"If the ſoil in which the hedge has been planted is poor, in conſequence of this management, the branches, after a few years, become ſo numerous, that the hedge is unable to ſend out any ſhoots at all, and the utmoſt exertion of the vegetative powers enables it only to put forth leaves. Theſe leaves are renewed in a ſickly ſtate for ſome years, and at laſt ceaſe to grow at all—the branches become covered with fog, and the hedge periſhes entirely.

"But if the ſoil be very rich, notwithſtanding this great multiplication of the ſtems, the roots will ſtill have ſufficient vigour to force out a great many ſmall ſhoots, which advance to a great length, but never attain a proportional thickneſs. And as the vigour of the hedge makes them continue to vegetate very late in autumn, the froſts come on before the tops of theſe dangling ſhoots have attained any degree of woody firmneſs, ſo that they are killed almoſt entirely by it: the whole hedge becomes covered with theſe long dead ſhoots, which are always diſagreeable to look at, and uſually indicate the approaching end of the hedge.

"The cauſes of the diſorder being thus explained, it will readily occur, that the only radical cure is amputation; which, by giving an opportunity to begin with training the hedge anew, gives alſo an opportunity of avoiding the errors that occaſioned it. In this caſe, care ought to be taken to cut the plants as cloſe to the ground as poſſible, as there the ſtems will be leſs numerous than at any greater height. And particular attention ought to be had to allow very few ſhoots to ariſe from the ſtems that have been cut over, and to guard carefully againſt ſhortening them.

“ But as the roots, in the caſe here ſuppoſed, will be very ſtrong, the ſhoots that are allowed to ſpring from the ſtems will be very vigorous, and there will be ſome danger of their continuing to grow later in the ſeaſon than they ought in ſafety to do; in which caſe, ſome part of the top of the ſhoot may perhaps be killed the firſt winter, which ought if poſſible to be prevented. This can only be effectually done by giving a check to the vegetation in autumn, ſo as to allow the young ſhoots to harden in the points before the winter approaches. If any of the leaves or branches of a tree are cut away while it is in the ſtate of vegetation, the whole plant feels the loſs, and it ſuffers a temporary check in its growth in proportion to the loſs that it thus ſuſtains. To check, therefore, the vigorous vegetation at the end of autumn, it will be prudent to chooſe the beginning of September for the time of lopping off all the ſupernumerary branches from the young hedge, and for clipping off the ſide branches that have ſprung out from it; which will, in general, be ſufficient to give it ſuch a check in its growth at that ſeaſon, as will prevent any of the ſhoots from advancing afterwards. If the hedge is extremely vigorous, a few buds may be allowed to grow upon the large ſtumps in the ſpring, with a view to be cut off at this ſeaſon, which will tend to ſtop the vegetation of the hedge ſtill more effectually.

“ By this mode of management, the hedge may be preſerved entire through the firſt winter. And as the ſhoots become leſs vigorous every ſucceſſive ſeaſon, there will be leſs difficulty in preſerving them at any future period. It will always be proper, however, to trim the ſides of a very vigorous hedge for ſome years while it is young, about the ſame ſeaſon of the year, which will tend powerfully to prevent this malady. But when the hedge has advanced to any conſiderable height, it will be equally proper to clip it during any of the winter-months, before Candlemas.”

20
Lord Kames's obſervations.

21
Fence for a deer-park.

Lord Kames, in his work intitled the Gentleman Farmer, gives ſeveral directions for the raiſing and mending of hedges conſiderably different from thoſe above related. For a deer-park he recommends a wall of ſtone coped with turf, having laburnums planted cloſe to it. The heads of the plants are to be lopped off, in order to make the branches extend laterally, and interweave in the form of a hedge. The wall will prevent the deer from breaking through; and if the hedge be trained eight feet high, they will not attempt to leap over. He prefers the laburnum plant, becauſe no beaſt will feed upon it except a hare, and that only when young and the buſh tender. Therefore, no extraordinary care is neceſſary except to preſerve them from the hare for four or five years. A row of alders may be planted in front of the laburnums, which no hare nor any other beaſt will touch. The wall he recommends to be built in the following manner, as being both cheaper and more durable than one conſtructed entirely of ſtone. Raiſe it of ſtone to the height of two feet and a half from the ground, after which it is to be coped with ſod as follows. Firſt lay on the wall, with the graſſy ſide under, ſod cut with the ſpade four or five inches deep, and of a length equal to the thickneſs of the wall. Next, cover this ſod with looſe earth rounded like a ridge. Third, prepare thin ſod, caſt with the paring ſpade, ſo long as to extend, beyond the thickneſs of the wall, two inches on each ſide. With theſe cover the looſe earths keeping the graſſy ſide above; place them ſo much on the edge, that each ſod ſhall cover part of another, leaving only about two inches without cover: when 20 or 30 yards are thus finiſhed, let the ſod be beat with mallets by two men, one on each ſide of the wall, ſtriking both at the ſame time. By this operation the ſod becomes a compact body that keeps in the moiſture, and encourages the graſs to grow. Laſtly, cut off the ragged ends of the ſod on each ſide of the wall, to make the covering neat and regular. The month of October is the proper ſeaſon for this operation, becauſe the ſun and wind, during ſummer, dry the ſod, and hinder the graſs from vegetating. Moiſt ſoil affords the beſt ſod. Wet ſoil is commonly too fat for binding; and, at any rate, the watery plants it produces will not thrive in a dry ſituation. Dry ſoil, on the other hand, being commonly ill bound with roots, ſhakes to pieces in handling. The ordinary way of coping with ſod, which is to lay them flat and ſingle, looks as if intended to dry the ſod and kill the graſs; not to mention that the ſod is liable to be blown off the wall by every high wind.

22
Of a wall uſed as a fence without any hedge.

Where the wall itſelf is to be uſed as a fence without any hedge, a ditch is to be made on each ſide, beginning a foot from the root of the wall, and ſloping outward to the depth of three feet, or at leaſt two and an half. The ditch ſhould be equally ſloped on the other ſide, ſo as to be four feet wide. A rood of this fence, including every article, may be done for three ſhillings or thereabouts; and a field of 10 acres thus incloſed, for about 30 l. which by a ſtone wall would coſt upwards of 50 l. It will alſo ſtand many years without any need of reparation; while ſtone walls require no leſs than $2\frac{1}{2}$ *per cent.* of the original coſt expended annually to keep them up.

23
Advantages of a thorn-hedge.

The advantages of a thorn hedge, according to our author, are, that it is a very quick grower, when planted in a proper ſoil; ſhooting up ſix or ſeven feet in a ſeaſon. Though tender, and apt to be hurt by weeds when young, it turns ſtrong, and may be cut into any ſhape. Even when old, it is more diſpoſed than other trees to lateral ſhoots; and laſtly, its prickles make it the moſt proper of all for a fence. None of theſe thorns ought to be planted in a hedge till five years of age, and it is of the utmoſt importance that they be properly trained in the nurſery. The beſt ſoil for a nurſery, his Lordſhip obſerves, is between rich and poor. In the latter the plants are dwarfiſh; in the former, being luxuriant and tender, they are apt to be hurt during the ſeverity of the weather; and theſe imperfections are incapable of any remedy. An eſſential requiſite in a nurſery is free ventilation.

24
Of a proper nurſery for raiſing the plants.

“ How common (ſays his Lordſhip) is it to find nurſeries in hollow ſheltered places, ſurrounded with walls and high plantations, more fit for pine-apples than barren trees! The plants thruſt out long ſhoots, but feeble and tender: when expoſed in a cold ſituation, they decay, and ſometimes die. But there is a reaſon for every thing: the nurſeryman's view is to make profit by ſaving ground, and by impoſing on the purchaſer tall plants, for which he pretends to demand double price. It is ſo difficult to purchaſe wholeſome and well nurſed plants, that every gentleman farmer ought to raiſe plants for himſelf.

25 Of raiſing them from the roots of old hedges.

“ As thorns will grow pleaſantly from roots, I have long practiſed a frugal and expeditious method of raiſing them from the wounded roots that muſt be cut off when thorns are to be ſet in a hedge. Theſe roots cut into ſmall pars, and put in a bed of freſh earth, will produce plants the next ſpring no leſs vigorous than what are produced from ſeed; and thus a perpetual ſucceſſion of plants may be obtained without any more ſeed. It ought to be a rule, never to admit into a hedge plants under five years old; they deſerve all the additional ſum that can be demanded for them. Young and feeble plants in a hedge are of ſlow growth; and, beſides the loſs of time, the pailing neceſſary to ſecure them from cattle muſt be renewed more than once before they become a fence. A thorn hedge may be planted in every month of winter and ſpring unleſs it be froſt. But I have always obſerved that thorns planted in October are more healthy, puſh more vigorouſly, and fewer decay, than at any other time. In preparing the thorns for planting, the roots ought to be left as entire as poſſible, and nothing cut away but the ragged parts.

26 Proper method of planting.

“ As a thorn hedge ſuffers greatly by weeds, the ground where they are planted ought to be made perfectly clean. The common method of planting is to leave eight or nine inches along ſide of the intended ditch, termed a *ſcarſement;* and behind the ſcarſement to lay the ſurface ſoil of the intended ditch, cut into ſquare ſods two or three inches deep, its graſſy ſurface under. Upon that ſod, whether clean or dirty, the thorns are laid, and the earth of the ditch above them. The graſs in the ſcarſement, with what weeds are in the moved earth, ſoon grow up, and require double diligence to prevent the young thorns from being choked. The following method deſerves all the additional trouble it requires. Leaving a ſcarſement as above of 10 inches, and alſo a border for the thorns, broad or narrow according to their ſize; lay behind the border the ſurface of the intended ditch, champed ſmall with the ſpade, and upon it lay the mouldery earth that fell from the ſpade in cutting the ſaid ſurface. Cover the ſcarſement and border with the under earth, three inches thick at leaſt: laying a little more on the border to raiſe it higer than the ſcarſement, in order to give room for weeding. After the thorns are prepared by ſmoothing their rugged roots with a knife, and lopping off their heads to make them grow buſhy, they are laid fronting the ditch, with their roots on the border, the head a little higher than the root. Care muſt be taken to ſpread the roots among the ſurface-earth taken out of the ditch, and to cover them with the mouldery earth that lay immediately below. This article is of importance, becauſe the mouldery earth is the fineſt of all. Cover the ſtems of the thorns with the next ſtratum of the ditch, leaving always an inch at the top free. It is no matter how poor this ſtratum be, as the plants draw no nouriſhment from it. Go on to finiſh the ditch, preſſing down carefully every row of earth thrown up behind the hedge, which makes a good ſolid mound impervious to rain. It is a ſafeguard to the young hedge to raiſe this mound as perpendicular as poſſible; and for that reaſon, it may be proper, in looſe ſoil, when the mound is raiſed a foot or ſo, to bind it with a row of the tough ſod, which will ſupport the earth above till it become ſolid by lying. In poor ſoil more care is neceſſary. Behind the line of the ditch the ground intended for the ſcarſement and border ſhould be ſummer fallowed, manured, and cleared of all graſs roots; and this culture will make up for the inferiority of the ſoil. In very poor ſoil, it is vain to think of planting a thorn hedge. In ſuch ground there is a neceſſity for a ſtone fence.

“ The only reaſon that can be given for laying thorns as above deſcribed; is to give the roots ſpace to puſh in all directions; even upward into the mound of earth. There may be ſome advantages in this; but, in my apprehenſion, the diſadvantage is much greater of heaping ſo much earth upon the roots as to exclude not only the ſun, but the rain which runs down the ſloping bank, and has no acceſs to the roots. Inſtead of laying the thorns fronting the ditch, would it not do better to lay them parallel to it; covering the roots with three or four inches of the beſt earth, which would make a hollow between the plants and the ſloping bank? The hollow would intercept every drop of rain that falls on the bank, to ſink gradually among the roots. Why at any rate ſhould a thorn be put into the ground ſloping? This is not the practice with regard to any other tree: and I have heard of no experiment to perſuade me that a thorn thrives better ſloping than erect. There occurs, indeed one objection againſt planting thorns erect, that the roots have no room to extend themſelves on that ſide where the ditch is. But does it not hold, that when, in their progreſs, roots meet with a ditch, they do not puſh onward; but, changing their direction, puſh downward at the ſide of the ditch? If ſo, theſe downward roots will ſupport the ditch, and prevent it from being mouldered down by froſt. One thing is evident without experiment, that thorns planted erect may ſooner be made a complete fence than when laid ſloping as uſual. In the latter caſe, the operator is confined to thorns that do not exceed a foot or 25 inches; but thorns five or ſix feet high may be planted erect; and a hedge of ſuch thorns, well cultivated in the nurſery, will in three years arrive to greater perfection that a hedge managed in the ordinary way will do in twice that time.

27 Of ſecuring an hedge after it is planted.

After the hedge is finiſhed, it is abſolutely neceſſary to ſecure it for ſome time from the depredations of cattle; and this is by no means an eaſy matter. “ The ordinary method of a paling (ſays his lordſhip) is no ſufficient defence againſt cattle: the moſt gentle make it a rubbing poſt, and the vicious wantonly break it down with their horns. The only effectual remedy is expenſive; *viz.* two ditches and two hedges, with a mound of earth between them. If this remedy, however, be not palatable, the paling ought at leaſt to be of the ſtrongeſt kind. I recommend the following as the beſt I am acquainted with: Drive into the ground ſtrong ſtakes three feet and an half long, with intervals from eight to twelve inches, according to the ſize of the cattle that are to be incloſed; and all preciſely of the ſame height. Prepare plates of wood ſawed out of logs, every plate three inches broad and half an inch thick. Fix them on the head of the ſtakes with a nail driven down into each. The ſtakes will be united ſo firmly, that one cannot be moved without the whole: and will be proof accordingly againſt the rubbing of cattle. But, after all, it is no fence againſt vicious cattle. The only proper place for it is the ſide of a high road, or to fence a plantation of trees. It will indeed be a ſufficient fence againſt ſheep, and endure till the hedge itſelf becomes a fence. A fence thus completed, including thorns, ditching, wood, nails, &c. will not much exceed two ſhillings every ſix yards."

28 Of training up hedges.

His lordſhip diſcommends the ordinary method of training hedges by cutting off the top and ſhortening the lateral branches in order to make it thick and buſhy. This, as well as the method of cutting off the ſtems two or three inches above the ground, indeed produces a great number of ſhoots, and makes a very thick fence, but which becomes ſo weak when bare of leaves, that cattle break through it in every part. To determine the beſt method of proceeding in this caſe, his lordſhip made an experiment on three hedges, which were twelve years old at the time he wrote. The firſt was annually pruned at the top and ſides; the ſides of the ſecond were pruned but not the top; and the third was allowed to grow without any pruning. The firſt, at the time of writing, was about four feet broad, and thick from top to bottom; but weak in the ſtems, and unable to reſiſt any horned beaſt: the ſecond was ſtrong in its ſtems, and cloſe from top to bottom: the third was alſo ſtrong in its ſtems, but bare of branches for two feet from the ground; the lower ones having been deprived of air and rain by the thick ſhade of thoſe above them. Hence he directs that hedges ſhould be allowed to grow till the ſtems be five or ſix inches in circumference, which will be in ten or twelve years; at which time the hedge will be fifteen feet or more in height. The lateral branches next the ground muſt be pruned within two feet of the ſtem; thoſe above muſt be made ſhorter and ſhorter in proportion to their diſtance from the ground; and at five feet high they muſt be cut cloſe to the ſtem, leaving all above full freedom of growth. By this dreſſing the hedge takes on the appearance of a very ſteep roof. and it ought to be kept in that form by pruning. This form gives free acceſs to rain, ſun, and air: every twig has its ſhare, and the whole is preſerved in vigour. When the ſtems have arrived at their proper bulk, cut them over at five feet from the ground where the lateral branches end. This anſwers two excellent purpoſes: the firſt is to ſtrengthen the hedge, the ſap that formerly aſcended to the top being now diſtributed to the branches: the next is, that a tall hedge ſtagnates the air, and poiſons both corn and graſs near it. A hedge trained in this manner is impenetrable even by a bull.

29 Plaſhing of hedges diſcommended.

With regard to the practice of *plaſhing* an old hedge recommended by Dr Anderſon, his lordſhip obſerves that "it makes a good interim fence, but at the long-run is deſtructive to the plants; and accordingly there is ſcarcely to be met with a complete good hedge where plaſhing has been long practiſed. A thorn is a tree of long life. If, inſtead of being maſſacred by plaſhing, it were raiſed and dreſſed in the way here deſcribed, it would continue a firm hedge perhaps 500 years.

30 Hedges ought to be planted on the ſide of the bank, and no trees allowed in them.

"A hedge ought never to be planted on the top of the mound of earth thrown up from the ditch. It has indeed the advantage of an awful ſituation; but being planted in bad ſoil, and deſtitute of moiſture, it cannot thrive: it is at beſt dwarfiſh, and frequently decays and dies. To plant trees in the line of the hedge, or within a few feet of it, ought to be abſolutely prohibited as a pernicious practice. It is amazing that people ſhould fall into this error, when they ought to know that there never was a good thorn-hedge with trees in it. And how ſhould it be otherwiſe? An oak, a beech, an elm, grows faſter than a thorn. When ſuffered to grow in the midſt of a thorn-hedge, it ſpreads its roots every where, and robs the thorns of their nouriſhment. Nor is this all: the tree, overſhadowing the thorns, keeps the ſun and air from them. At the ſame time, no tree takes worſe with being overſhadowed than a thorn.

31 Of filling up gaps.

"It is ſcarce neceſſary to mention gaps in a hedge, becauſe they will ſeldom happen where a hedge is trained as above recommended. But in the ordinary method of training, gaps are frequent, partly by the failure of plants, and partly by the treſpaſſing of cattle. The ordinary method of filling up gaps is to plant ſweet briar where the gap is ſmall, and a crab where it is large. This method I cannot approve for an obvious reaſon; a hedge ought never to be compoſed of plants which grow unequally. Thoſe that grow faſt, overtop and hurt the ſlow growers; and with reſpect, in particular, to a crab and ſweet briar, neither of them thrive under the ſhade. It is a better method to remove all the withered earth in the gap, and to ſubſtitute freſh ſappy moud mixed with ſome lime or dung. Plant upon it a vigorous thorn of equal height with the hedge, which in its growth will equal the thorns it is mixed with. In that view there ſhould be a nurſery of thorns of all ſizes, even to five feet high, ready to fill up gaps. The beſt ſeaſon for this operation is the month of October. A gap filled with ſweet briar, or a crab lower than the hedge, invites the cattle to break through and trample the young plants under foot; to prevent which, a pailing raiſed on both ſides is not ſufficient, unleſs it be raiſed as high as the hedge.

32 In what caſes whins are neceſſary.

"Where a field is too poor to admit of a thorn-hedge, if there be no quantity of ſtones eaſily procurable, whins are the only reſource. Theſe are commonly placed on the top of a dry earth-dyke, in which ſituation they ſeldom thrive well. The following ſeems preferable. Two parallel ditches three feet wide and two deep, border a ſpace of twelve feet. Within this ſpace raiſe a bank at the ſide of each ditch with the earth that comes out of it, leaving no interval between the two banks. Sow the banks with whin ſeed, and plant a row of trees in the interval. When the whins are pretty well grown, the hedge on one of the banks may be cut down, then the other as ſoon as it becomes a fence, and ſo alternately. While the whins are young, they will not be diſturbed by cattle, if paſſages be left to go out and in. Theſe paſſages may be cloſed up when the hedge is ſufficiently ſtrong to be a fence. A whin-hedge, thus managed, will laſt many years, even in ſtrong froſt, unleſs very ſevere. There are many whin-hedges in the ſhire of Kincardine not ſo ſkilfully managed, and yet the poſſeſſors appear not to be afraid of froſt. Such fences ought to be extremely welcome in the ſandy grounds of the ſhire of Moray, where there is ſcarce a ſtone to be found. The few earth-fences that are there raiſed, compoſed moſtly of ſand, very ſoon crumble down."

Annals of Agriculture, vol. vi. p. 357.

In the fourth volume of Mr Young's Northern Tour, the author recommends the tranſplanting of old hedges, which his correſpondent Mr Beverly ſays he has tried with prodigious ſucceſs.

Ib. p. 494.

33
Mr Bakewell's fences.

Mr Bakewell, we are told, is very curious in his fences, and plants his quicks in a different manner from what is common in various parts of the kingdom. He plants one row at a foot from ſet to ſet, and making his ditch, lays the earth which comes out of it to form a bank on the ſide oppoſite to the quick. In the common method the bank is made on the quick ſide above it. Reaſons are not wanting to induce a preference of this method. The plants grow only in the ſurface of the earth uncovered from the atmoſphere, which muſt neceſſarily be a great advantage; whereas, in the uſual way of planting, the earth, which is always the beſt, is loaded by a thick covering obliquely of the earth out of the ditch. If the roots ſhoot in the beſt ſoil, they will be out of the reach of the influences of the air; the conſequence of which is, that they cannot have ſo large a ſpace of that earth as if ſet on the flat. The way to have a tree or a quick thrive in the beſt manner poſſible, is to ſet it on the ſuface, without any ditch or trench, that cuts off half its paſture. But if a ditch is neceſſary, the next beſt way muſt of courſe be ſtill to keep it on the flat ſurface; and the worſt way to cover up that ſurface, by loading it with the dead earth out of a trench. To ſay that there are good hedges in the common method is not a concluſive argument, unleſs both were tried on the ſame ſoil and expoſure.

34
Of hedges in ſtony and gravelly ſoils.

In the 7th volume of the ſame work, a correſpondent, who ſigns himſelf M. M. obſerves, that notwithſtanding all the improvements that have been made in the conſtruction of hedges and fences, there are many ſoils in England, which, from their ſandy and gravelly natures, are little adapted to any of the plants in common uſe, and are therefore ſubject to all the inconveniences of dead hedges and gaps. Of this kind are all the ſandy and gravelly incloſures, which conſtitute ſo large a part of many diſtricts in the iſland. For theſe our author recommends a triple row of furze; though notwithſtanding its advantages, he ſays it is liable to be deſtroyed by ſevere winters, contrary to the aſſertion of lord Kames above-related. "It is liable (ſays he) to be ſo completely cut off by a ſevere winter, that I have ſeen tracks of many hundred acres laid open in the ſpace of a few weeks, and reduced to as defenceleſs a ſtate as the ſurrounding waſtes. On ſuch ſoils therefore he recommends the holly; the only diſadvantage of which, he ſays, is its ſlow growth. On moſt of theſe ſoils alſo the black thorn will riſe ſpontaneouſly; and even the quick, though ſlowly, will advance to a ſufficient degree of perfection. The birch, however, he particularly recommends, as growing equally on the drieſt and on the wetteſt ſoils, propagating itſelf in ſuch numbers, that were they not deſtroyed, all the ſandy waſtes of this kingdom would be quickly covered with them. He recommends particularly the keeping of a nurſery for ſuch plants as are commonly uſed for hedges. "I generally (ſays he) pick out a bit of barren land, and after ploughing it three or four times to bury and deſtroy the heath, I find it anſwer extremely well for a nurſery. Into this ſpot I tranſplant quick, hollies, and every tree which I uſed for fences or plantations. By eſtabliſhing ſuch a nurſery, a gentleman will always be able to command a ſufficiency of ſtrong and hardy plants which will not deceive his expectations. I look upon thorns of five or ſix years old, which have been twice tranſplanted from the ſeed-bed, to be the beſt of all; but as it may be neceſſary to fill up caſual gaps in hedges that have been planted ſeveral years, a proviſion ſhould be made of plants of every age, to 12 or 14 years old. All plants which are intended to be moved, ſhould be tranſplanted every two or at moſt three years; without this attention, they attach themſelves ſo firmly to the ſoil as renders a ſubſequent operation dangerous. All who tranſplant quicks or hollies ought to begin their labours as early as convenient in the autumn; for I have found by repeated experience that neither of theſe plants ſucceed ſo well in the ſpring."

35
Of a proper nurſery.

36
Of repairing ruinous hedges.

Where the fences of a track of ground are in a very ruinous condition, it is abſolutely neceſſary to ſcower the ditches, throw up the banks, and ſecure the whole immediately by the firmeſt dead fences we can procure. If there is a total want of living plants, the cultivator can do nothing but plant new hedges; but if, as is generally the caſe, the banks are furniſhed with a multitude of old ſtems, though totally unconnected as a fence, the time and labour requiſite for the intended improvement will be conſiderably abridged. All the ſtraggling branches which add no ſolidity to the fence are to be cut off; after which the reſt of the ſtems muſt be ſhortened to the height of three or four feet. The method of cutting down every thing to the ground, which is now ſo general, our author highly condemns. "Such a fence (ſays he) has within it no principle of ſtrength and connexion; it is equally expoſed in every part to depredations of cattle and ſportſmen; and even ſhould it eſcape theſe, the firſt fall of ſnow will nearly demoliſh it. On the contrary, wherever theſe vegetable paliſades can be left, they are impenetrable either for man or horſe, and form ſo many points of union which ſupport the reſt."

37
Plaſhing on hedges diſcommended.

Another method of ſtrengthening defective fences, is to bend down ſome of the lateral ſhoots in a horizontal direction, and to ſpread them along the line of the farm like eſpalier trees in a garden. A ſingle ſtem, when it riſes perpendicularly, will not ſecure a ſpace of more than two or three feet, but when bent longitudinally, they will form a barrier at leaſt ſufficient to repel all cattle but hogs for 12 or 14 feet on each ſide. By bending down, our author does not mean the common *plaſhing* method, which is very injurious to the plants; but the ſpreading two or three of the moſt convenient branches along the hedge, and faſtening them down either by pegs or tying, without injury

jury to the ſtem, until they habitually take the propoſed direction. Thoſe who make the experiment for the firſt time will be aſtoniſhed how ſmall a number of plants may be made to fill a bank, with only trifling intervals. The birch is particularly uſeful for this purpoſe; being of ſo flexible a nature, that ſhoots of 10 or 12 feet in length may be eaſily forced into a horizontal direction; and if the other ſhoots are pruned away, all the juices of the plant will be applied to nouriſh the ſelected few: by which means they will in a few years acquire all the advantages of poſts and rails, with this material difference, that inſtead of decaying, they become annually better. It is beſides the property of all inclined branches to ſend up a multitude of perpendicular ſhoots; ſo that by this horizontal inclination, if judiciouſly made, you may acquire almoſt all the advantages of the thickeſt fence; but when the ſtems are too old and brittle to bear this operation, it will be adviſable to cut off all the uſeleſs ones cloſe to the ground, and next ſpring they will be ſucceeded by a number of young and vigorous ones. Select the beſt of theſe to be trained in the manner already directed, and extirpate all the reſt, to increaſe their vigour. The ſhoots of ſuch old ſtems as have been juſt now deſcribed will attain a greater ſize in three or four years than any young ones that can be planted will do in twelve.

38
Of thickening hedges by laying down the young ſhoots.

Another method which our author has practiſed with the greateſt ſucceſs is the following. The tender ſhoots of moſt trees, if bended downwards and covered with earth, will put forth roots, and being divided from the parent ſtem at a proper time become freſh plants; an operation well known to gardeners, under the name of *laying*. This may be as advantageous to the farmer, if he will take the very moderate trouble of laying down the young and flexible branches in his fences. Moſt ſpecies of trees, probably all, will be propagated by this method; but particularly the withy, the birch, the holly, the white thorn, and the crab, will alſo take root in this method, though more ſlowly; the latter being an excellent plant for fences, and not at all nice in the ſoil on which it grows. The advantage of laying down branches in this manner over the planting of young ones is, that when you endeavour to fill up a gap by the latter method, they advance very ſlowly, and are in danger of being ſtifled by the ſhade of the large trees; whereas, if you fortify a gap by ſpreading the branches along it in the manner juſt mentioned, and at the ſame time inſert ſome of the moſt thriving ſhoots in the ground, they will advance with all the vigour of the parent plant, and you may allow them to grow until they are ſo fully rooted as to be free from danger of ſuffocation.

39
In what caſe the cutting down of hedges is proper.

It frequently happens, that the fences of an eſtate have been neglected for many years, and exhibit nothing but ragged and deformed ſtems at great intervals. In this caſe it will be proper to cut them all off level with the ground: the conſequence of this is, that next year they will put forth a great number of ſhoots, which may be laid down in every direction, and trained for the improvement of the fence. When this operation is performed, however, it ought always to be done with an ax, and not with a ſaw; it being found that the latter inſtrument generally prevents the vegetation of the plant. All the ſhoots laid down in this manner ſhould be allowed to remain for ſeveral years, that they may be firmly rooted. Thus they will make prodigious advances; and it is to be obſerved, that the more the parent plant is diveſted of all ſuperfluous branches, the greater will be the nouriſhment tranſmitted to the ſcions.

Our author, however, is inclined to ſuſpect that the moſt perfect form of an hedge, at leaſt in all but thoſe compoſed of thorns and prickly plants, is to train up as many ſtems as will nearly touch each other. The force of every fence conſiſts chiefly in the upright ſtems: where theſe are ſufficiently near and ſtrong, the hedge reſiſts all oppoſition, and will equally repel the violence of the bull, and the inſidious attacks of the hogs. It is abſolutely proper that all hedges ſhould be inſpected once a-year; when not only the ditch ought to be thrown out, and the bank ſupported, but the ſtraggling ſhoots of all the live plants ought to be pruned. By theſe are meant all ſuch as project over the ditch beyond the line of the hedge, and which add nothing to its ſtrength, though they deprive the uſeful ſtems of part of their nouriſhment. Where an hedge is compoſed of plants of inferior value, it will be proper to train thoſe in the manner juſt now recommended, and to plant the bank with quick or holly. When theſe laſt have attained a ſufficient ſize, the others may be extirpated; which is beſt done by cutting down all the ſhoots repeatedly in the ſummer, and leaving the roots to rot in the hedge.

40
Mr Erſkine's method of conſtructing hedges.

In the 13th volume of the Annals, W. Erſkine, Eſq; gives an account of a method of fencing very much reſembling that recommended by lord Kames, and which has been already deſcribed. That gentleman is of opinion, that in ſome caſes *dead ſtone walls*, as they are called, are more advantageous than hedges. "That hedges (ſays he) are more ornamental, cannot be denied; and they are generally allowed to afford more ſhelter: but the length of time, the conſtant attention, and continual expence of defending them until they bear even the reſemblance of a fence, induces many people in thoſe places where the materials are eaſily procured, to prefer the dry ſtone walls; for tho' the firſt coſt is conſiderable, yet as the farmer reaps the immediate benefit of the fence (which is undoubtedly the moſt ſecure one), they are thought on the whole to be the leaſt expenſive; beſides, the cattle in expoſed ſituations, and eſpecially in theſe northern parts, are ſo impatient of confinement at the commencement of the long, cold, wet nights, that no hedges I have ever yet ſeen, in any part of this iſland, are ſufficient to keep them in."

From conſiderations of this kind, the late Sir George Suttie of Eaſt Lothian was induced to think of a fence which might join the ſtrength of the wall to the ornament of the hedge. His thorns were planted in the uſual manner on the ſide of the ditch: but inſtead of putting behind them a poſt and rail or paling on the top of the bank, he erected a wall two feet and a half high; and being well ſituated for procuring lime, he uſed it in the conſtruction of theſe walls which Mr Erſkine greatly recommends; "as the ſatisfaction they afford, by requiring no repairs, and the duration of them, more than repay the expence: but where the price of lime is high they may be built without any cement, and anſwer the purpoſe very well if the work is properly executed."

In making a new fence of this kind, the ſurface of the ground ſhould be pared off the breadth of the ditch, and likewiſe for two feet more, in order to prevent as much as poſſible the thorns from being injured by the growth of graſs and weeds. The ditch ſhould be five feet broad, two and an half in depth, and one foot broad at the bottom. Leave one foot for an edging or ſcarſement, then dig the earth one ſpit of a ſpade for about one foot, and put about three inches of good earth below the thorn, which ſhould be laid nearly horizontal, but the point rather inclining upwards, in order to let the rain drip to the roots; then add a foot of good earth above it; leave three or four inches of a ſcarſement before another thorn is planted; it muſt not be directly over the lower one, but about nine inches or a foot to one ſide of it: then throw a foot of good earth on the thorn, and trample it well down, and level the top of the bank for about three feet and an half for the baſe of the wall to reſt on. This baſe ſhould be about nine or ten inches, but muſt not exceed one foot from the thorn. The wall ought to be about two feet thick at the bottom and one foot at the top; the cope to be a ſingle ſtone laid flat; then covered with two ſods of turf, the graſs of the undermoſt to be next the wall, and the other ſod muſt have the graſs ſide uppermoſt: the ſods ſhould be of ſome thickneſs, in order to retain moiſture; ſo that they may adhere together, and not be eaſily diſplaced by the wind: the height of the wall to be two feet and an half, excluſive of the ſods; which together ſhould be from four to ſix inches, by which means the wall would be near to three feet altogether. The expence of the fences cannot ſo eaſily be counted, on account of the difference of the prices of labour in different parts. Mr Erſkine had them done with lime, every thing included, from 10½d. to 13d. per ell (which is equal to 37 inches 2 parts), according to the caſe or difficulty of working the quarry, and the diſtance of it from the place where the fence is erected. The lime coſts about 6d. per boll of about 4.0872667 buſhels; and from 15 to 16 bolls of lime are uſed to the rood of 36 ſquare ells Scots meaſure; and there are upwards of 43 Scotch ells, or 44 Engliſh yards. When the common round or flint ſtones are made uſe of, as they require more lime, it is neceſſary to uſe 30 or 35 bolls of lime to the rood. The thorns are ſold from five to ten ſhillings per thouſand, according to their age, reckoning ſix ſcore to the hundred. Making the ditch, laying the thorns, and preparing the top of the wall, generally coſt from 7d. to 8d. every ſix ells About 50 carts of ſtones, each cart carrying from 7 to 9 cwt. will build a rood; the carriage at 2d. per cart for half a mile's diſtance.

Warmth is undoubtedly as beneficial to hedges as trees; and the walls give an effectual ſhelter, which in expoſed ſituations is abſolutely neceſſary for rearing young hedges; and they likewiſe preſerve a proper degree of moiſture about the roots. If the hedges have been planted for ſix or ſeven years before the wall is built, cut them over to two or three inches above the ground with a ſharp tool, either in October or November, or early in the ſpring; and erect the wall as quickly in that ſeaſon as poſſible (the ſpring in this country can ſcarcely be ſaid to begin till the end of March). It is almoſt impoſſible to imagine the rapidity with which hedges grow in favourable ſituations. Mr Erſkine had one cut over in the ſpring, and by the end of the year it was almoſt as high as the wall. In three years he ſuppoſed, that not even the Highland ſheep, who eaſily overleap a wall of four feet and an half in height, would have been able to break through it.

41
Reaſons for planting oak trees in hedges.

Notwithſtanding the reaſons that have been given already againſt the planting of timber trees in hedges, we find the practice recommended by ſome authors as one of the beſt ſituations for raiſing ſhip-timber. The reaſons are, that the roots have free range in the adjoining incloſures, and the top is expoſed to the exerciſe of the winds; by which means the trees are at once enabled to throw out ſtrong arms, and have a large ſpreading head at the ſame time; ſo that we thus at once obtain quickneſs of growth, with ſtrength and crookedneſs of timber. Well trained timber trees it is alleged are not prejudicial to hedges, though pollards and low ſpreading trees are deſtructive to the hedge-wood which grows under them; neither are high trees prejudicial to corn-fields like high hedges and pollards, which prevent a proper circulation of air; and in Norfolk, where the cultivation of grain is carried on in great perfection, ſuch lands are ſaid to be *wood-bound*. But when an hedge is trimmed down to four or five feet high, with oaks interſperſed, a circulation of air is rather promoted than retarded by it; and a trimmed hedge will thrive quite well under tall ſtemmed trees, particularly oaks. For arable incloſures, there, hedges are recommended of four or five feet high, with oak-timbers from 15 to 25 feet ſtem. Higher hedges are more eligible for graſs lands: the graſſes affect warmth, by which their growth is promoted, and conſequently their quantity is increaſed, though perhaps their quality may ſuffer ſome injury. A tall fence likewiſe affords ſhelter to cattle, provided it be thick and cloſe at the bottom; but otherwiſe, by admitting the air in currents, it does rather harm than good. The ſhade of trees is equally friendly to cattle in ſummer; for which reaſon it is recommended in graſs incloſures to allow the hedge to make its natural ſhoots, and at the ſame time to have oak-trees planted in it at proper intervals. Upon bleak hills, and in expoſed ſituations, it will be proper to have two or even three rows of hedgewood, about four feet diſtant from each other; the middle row being permitted to reach, and always to remain at its natural height: whilſt the ſide rows are cut down alternately to give perpetual ſecurity to the bottom, and afford a conſtant ſupply of materials for dead hedges and other purpoſes of underwood.

43
Beſt method of planting and raiſing holly for hedges.

Much has been ſaid of the excellency of the holly as a material for hedges; and indeed the beauty of the plant, with its extreme cloſeneſs, and continuing green throughout the winter evidently give it the preference to all others; and could it be raiſed with equal eaſe, there is no doubt that it would come into univerſal practice. Beſides the above properties, the holly will thrive almoſt upon any ſoil; but thin-ſoiled ſtony heights ſeem to be its natural ſituation; and it may properly enough be ſaid, that holly will grow wherever corn will. Its longevity is likewiſe exceſſive; and being of ſlow growth, it does not *ſuck the land*, as the farmers expreſs it, or deprive the crop of its nouriſhment, as other hedges do. The difficulty of raiſing holly may be obviated by planting it under crabs, which have a tendency to grow more upright than hawthorns, and conſequently affording more air, will not impede its progreſs though they afford ſhelter. It may even be raiſed alone without any great difficulty; only in this caſe the dead fence, to ſecure it, muſt be kept up at leaſt ten or twelve years, inſtead of ſix or ſeven, as in the other caſe; and indeed, conſidering the advantages to be derived from fences of this kind, they ſeem to merit all the additional trouble requiſite.

The holly may be raiſed either under the crab or hawthorn in two ways, viz. by ſowing the berries when the quick is planted, or by inſerting the plants themſelves the enſuing midſummer. The former is by much the more ſimple, and perhaps upon the whole the better method. The ſeeds may either be ſcattered among the roots of the deciduous plants, or be ſown in a drill in front: and if plants of holly be put in, they may either be planted between thoſe of the crab, or otherwiſe in front in the quincunx manner.

Where furze or whins are to be uſed either as a fence by themſelves or an aſſiſtant to another, it is better to uſe the French ſeed than that produced in this country, as the former ſeldom ripens in this country, and conſequently cannot like the latter over-run the adjacent incloſure. It may be had at the ſeed-ſhops in London for about 15d. per pound, and one pound will ſow 40 ſtatute rods. When uſed as an aſſiſtant to an hedge, it is more proper to ſow it on the back of the bank than on the top of it; as in this caſe it is more apt to overhang the young plants in the face of the bank; whilſt in the other it is better ſituated for guarding the bank, and preventing it from being torn down by cattle. The method of ſowing is as follows: Chop a drill with a ſharp ſpade about two-thirds of the way up the back of the bank, making the cleft gape as wide as may be without breaking off the lip; and having the ſeed in a quart bottle, ſtopt with a cork and gooſe quill, or with a perforated wooden ſtopper, trickle it along the drill, covering it by means of a broom drawn gently above and over the mouth of the drill. Cloſing the drill with the back of the ſpade, ſhuts up the ſeeds too much from the air, and thus keeps them too long from riſing.

Hedge-Hog. See Erinaceus.

Hedge Sparrow. See Motacilla.

HEDYCARYA, in botany: A genus of the polyandria order, belonging to the diœcia claſs of plants. The calyx of the male is cleft in eight or ten parts; there is no corolla, nor are there any filaments; the antheræ are in the bottom of the calyx, four furrowed, and bearded at top. The calyx and corolla of the female are as in the male; the germs pedicellated; the nuts pedicellated and monoſpermous.

HEDYOTIS, in botany: A genus of the monogynia order, belonging to the tetrandria claſs of plants; and in the natural method ranking under the 47th order, *Stellatæ*. The corolla is monopetalous and funnel-ſhaped; the capſule is bilocular, polyſpermous, inferior.

HEDYSARUM, in botany: A genus of the decandria order, belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The carina of the corolla is tranverſely obtuſe; the ſeed-veſſel a legumen with monoſpermous joints. There are 59 ſpecies of this plant, of which the moſt remarkable are, 1. The gyrans, or ſenſitive hedyſarum, a native of the Eaſt Indies, where it is called *burrum chundalli*. It arrives at the height of four feet, and in autumn produces bunches of yellow flowers. The root is annual or biennial. It is a trifolious plant, and the lateral leaves are ſmaller than thoſe at the end, and all day long they are in conſtant motion without any external impulſe. They move up and down and circularly. This laſt motion is performed by the twiſting of the footſtalks; and while the one leaf is riſing, its aſſociate is generally deſcending. The motion downwards is quicker and more irregular than the motion upwards, which is ſteady and uniform. Theſe motions are obſervable for the ſpace of 24 hours in the leaves of a branch which is loppped off from the ſhrub if it is kept in water. If from any obſtacle the motion is retarded, upon the removal of that obſtacle it is reſumed with a greater degree of velocity. 2. The coronarium, or common biennial French honey-ſuckle, hath large deeply ſtriking biennial roots; upright, hollow, ſmooth, very branchy ſtalks, three or four feet high, garniſhed with pinnated leaves; and from between the leaves proceed long ſpikes of beautiful red flowers, ſucceeded by jointed ſeed-pods.

Culture. The firſt ſpecies being a native of hot climates, requires, the common culture of tender exotics: the ſecond is eaſily raiſed from ſeed in any of the common borders, and is very ornamental.

HEEL, in anatomy, the hind part of the foot. See Anatomy, nº 66.

Heel of a Horſe, the lower hinder-part of the foot comprehended between the quarters and oppoſite to the toe. The heel of a horſe ſhould be high and large, and one ſide of it ſhould not riſe higher than the other upon the paſtern. To recover the heels of a horſe that is hoof-bound, you ſhould take out his ſole and keep his heels very wide, by which they will be reſtored in a month.

Heel of a Horſeman. This being the part that is armed with the ſpur, the word is uſed for the ſpur itſelf; "This horſe underſtands the heel well." To ride a horſe from one heel to another, is to make him go ſide-ways, ſometimes to one heel and ſometimes to another.

Heel, in the ſea-language. If a ſhip leans on one ſide, whether ſhe be aground or afloat, then it is ſaid ſhe heels a-ſtarboard, or a-port; or that ſhe heels offwards, or to the ſhore; that is, inclines more to one ſide than to another.

HEELER, or *Bloody Heel Cock*, a fighting cock, that ſtrikes or wounds much with his ſpurs.

The maſters know ſuch a cock, even while a chicken, by the ſtriking of his two heels together in his going.

HEEM (John David), an able painter, born at Utrecht in 1604. He excelled in painting flowers, fruit, vaſes, and inſtruments of muſic, which he performed in ſuch a perfect manner, that a perſon was apt to attempt taking them in his hand. His colouring is agreeable, and the inſects in his pictures appear alive. He died at Antwerp in 1674.

Cornelius de Heem, his ſon, was alſo a good painter, though inferior to his father.

HEEMSKIRK. See Hemskirk.

HEGIRA, in chronology, a celebrated epoch among the Mahometants. The word Arabic, formed of חגרה *hagirah, flight*; of הנך, *to fly, quit one's country, family, friends*, &c.

The event which gave occaſion to this epocha, was Mahomet's flight from Mecca. The magiſtrates of that city, fearing his impoſtures might raiſe a ſedition, reſolved to expel him: this, accordingly, they effected in the year of our Lord 622, on the evening of the 15th or 16th of July. See Arabia, n° 44.

To render this epocha more creditable, the Mahometans affect to uſe the word *hegira* in a peculiar ſenſe for an act of religion, whereby a man forſakes his country, and gives way to the violence of perſecutors and enemies of the faith: they add, that the Coraſhites, being then the ſtrongeſt party in the city, obliged their prophet to fly, as not being able to endure his aboliſhing of idolatry. This flight was not the firſt of Mahomet's, but it was the moſt famous. It happened in the 14th year from his aſſuming the character of prophet and apoſtle, and promulgating his new religion.

The orientals do not agree with us as to the time of the hegira. Among the Mahometans, Amaſi fixes it to the year of Chriſt 630, and from the death of Moſes 2347; and Ben Caſſem to the year of the world 5800: according to the Greek computation, among the Chriſtians, Said Ebn Batrik refers the hegira to the year of Chriſt 614, and of the creation 6114.

Khondemir relates, that it was Omar, the ſecond caliph, that firſt eſtabliſhed the hegira as an epocha, and appointed the years to be numbered from it: at the time he made this decree, there was already ſeven years elapſed. This eſtabliſhment was made in imitation of the Chriſtians, who, in thoſe times, reckoned their years from the perſecution of Diocleſian.

But there is another Hegira, and that earlier too though of leſs eminence. Mahomet, in the 14th year of his miſſion, was obliged to relinquiſh Medina: the Coraſhites had all along oppoſed him very vigorouſly, as an innovator and diſturber of the public peace; and many of his diſciples, not enduring to be reputed followers of an impoſtor, deſired leave of him to abandon the city, for fear of being obliged to renounce their religion. This retreat makes the firſt hegira. Theſe two hegiras the Mahometans, in their language, call *hegiratan*.

The years of the hegira conſiſt only of 354 days. To reduce theſe years to the Julian kalendar, i. e. to find what Julian year a given year of the hegira anſwers to, reduce the year of the hegira given into days, by multiplying by 354, divide the product by 365, and from the quotient ſubtract the intercalations, i. e. as many days as there are four years in the quotient; and laſtly, to the remainder add 622. See Year.

HEIDEGGER (John James), was the ſon of a clergyman, and a native of Zurich in Switzerland, where he married, but left his country in conſequence of an intrigue. Having had an opportunity of viſiting the principal cities of Europe, he acquired a taſte for elegant and refined pleaſures, as they are called, which, united to a ſtrong inclination for voluptuouſneſs, by degrees qualified him for the management of public amuſements. In 1708, when he was near 50 years old, he went to England on a negociation from the Swiſs at Zurich; but, failing in his embaſſy, he entered as a private ſoldier in the guards for protection. By his ſprightly engaging converſation and inſinuating addreſs, he ſoon worked himſelf into the good graces of the young people of faſhion; from whom he obtained the appellation of "the Swiſs Count." He had the addreſs to procure a ſubſcription, with which, in 1709, he was enabled to furniſh out the opera of "Thomyris," which was written in Engliſh, and performed at the queen's theatre in the Haymarket. The muſic, however, was Italian; that is to ſay, airs ſelected from ſundry of the foreign operas by Bunoncini, Scarlatti, Steffani, Gaſparini, and Albinoni. Heidegger by this performance alone was a gainer of 500 guineas. The judicious remarks he made on ſeveral defects in the conduct of the operas in general, and the hints he threw out for improving the entertainments of the royal theatre, ſoon eſtabliſhed his character as a good critic. Appeals were made to his judgment; and ſome very magnificent and elegant decorations introduced upon the ſtage in conſequence of his advice, gave ſuch ſatisfaction to George II. who was fond of operas, that, upon being informed to whoſe genius he was indebted for theſe improvements, his Majeſty was pleaſed from that time to countenance him, and he ſoon obtained the chief management of the opera-houſe in the Haymarket. He then ſet about improving another ſpecies of diverſion, not leſs agreeable to the king, which was the maſquerades, and over theſe he always preſided at the king's theatre. He was likewiſe appointed maſter of the revels. The nobility now careſſed him ſo much, and had ſuch an opinion of his taſte, that all ſplendid and elegant entertainments given by them upon particular occaſions, and all private aſſemblies by ſubſcription, were ſubmitted to his direction. From the emoluments of theſe ſeveral employments, he gained a regular conſiderable income, amounting, it is ſaid, in ſome years, to 5000l. which he ſpent with much liberality; particularly in the maintenance of a ſomewhat too luxurious table; ſo that it may be ſaid he raiſed an income, but never a fortune. At the ſame time his charities ought not to paſs unnoticed, which were frequent and ample. After a ſucceſsful maſquerade, he has been known to give away ſeveral hundred pounds at a time. "You know poor objects of diſtreſs better than I do," he would frequently ſay to a particular acquaintance; "be ſo kind as to give away this money for me." This well known liberality, perhaps contributed much to his carrying on that diverſion with ſo little oppoſition as he met with. He died in 1749, at the advanced age of 90 years.

As this perſon was long the *Arbiter Elegantiarum* of England, and is alluded to in many publications of his time, ſome account of him, it was thought, might be here expected: but to add all the anecdotes that have appeared concerning him, would enlarge this article beyond the limits to which it is entitled. One or two of the moſt remarkable, however, are ſubjoined in a note (A), as they may afford entertainment to many of our readers.

HEIDENHEIM, a town of Germany, in Swabia, and in the territory of Brentzhall, with a handſome palace or caſtle, belonging to the houſe of Wirtemberg. E. Long. 10. 19. N. Lat. 48. 37.

HEIDLEBERG, a conſiderable and populous town of Germany, capital of the Lower Palatinate, with a celebrated univerſity. It is noted for its great ton, which holds 800 hogſheads, generally kept full of good Rheniſh wine. It ſtands in a pleaſant rich country, and was a famous ſeat of learning: but it has undergone ſo many calamities, that it is nothing now to what it was formerly. It was firſt reduced to a heap of ruins in 1622 by the Spaniards; and the rich library was tranſported partly to Vienna, and partly to the Vatican at Rome. After this it enjoyed the benefit of peace, till the Proteſtant electoral houſe became extinct, and a bloody war enſued, in which not only the caſtle was ruined, but the tombs and bodies of the electors were ſhamefully violated and pillaged. This happened in 1693; and the people of the Palatinate were obliged to leave their dwellings, and to go for refuge into foreign countries. To add to theſe misfortunes the elector reſided at Manheim, and carried moſt of the people of diſtinction along with him, ſo that it is uncertain whether Heidleberg will ever recover itſelf or not, though they have begun to rebuild ſome of the fortifications. The great ton was broke to pieces in 1693 by the French, and at great expence in 1729 was repaired. The town ſtands on the river Neckar, over which there is a handſome bridge. E. Long. 8. 48. N. Lat. 49. 25.

HEIGHT, in general, ſignifies the difference between the ground and the top of any object meaſured perpendicularly.

Methods of meaſuring HEIGHTS. See GEOMETRY, TRIGONOMETRY, BAROMETER, MOUNTAIN, &c.

HEILA, a town of Royal Pruſſia, in Caſſubia, ſeated at the mouth of the river Viſtula, on the Baltic Sea, and ſubject to Poland, 12 miles north of Dantzic. E. Long. 19. 25. N. Lat. 54. 53.

HEILEGEN-HAVE, a ſea-port town of Germany, in Lower Saxony, and in Wageria, ſeated on the Baltic Sea, over againſt the iſland of Termeren. E. Long. 11. 15. N. Lat. 57. 30.

HEINECCIUS (John Gotlieb), one of the greateſt civilians of the 18th century, was born at Eiſenberg, in the principality of Altenburg, in 1681. After

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(A) Heidegger's countenance was peculiarly unpleaſing, from an unuſual harſhneſs of features. There is a mezzotinto of him by J. Faber, 1742, from a painting by Vanloo, a ſtriking likeneſs; and his face is introduced in more than one of Hogarth's prints.—Heidegger was, however, the firſt to joke upon his own uglineſs; and he once laid a wager with the earl of Cheſterfield, that within a certain given time his lordſhip would not be able to produce ſo hideous a face in all London. After ſtrict ſearch, a woman was found, whoſe features were at firſt ſight thought ſtronger than Heidegger's; but upon clapping her head-dreſs upon himſelf, he was univerſally allowed to have won the wager. Jolly, a well-known taylor, carrying his bill to a noble duke; his grace, for evaſion, ſaid "Damn your ugly face, I never will pay you till you bring me an uglier fellow than yourſelf!" Jolly bowed and retired, wrote a letter, and ſent it by a ſervant to Heidegger; ſaying, "His grace wiſhed to ſee him the next morning on particular buſineſs." Heidegger attended, and Jolly was there to meet him; and in conſequence as ſoon as Heidegger's viſit was over, Jolly received the caſh.

The late facetious duke of Montagu (the memorable author of the Bottle Conjuror at the theatre in the Haymarket) gave an entertainment at the Devil-tavern, Temple-bar, to ſeveral of the nobility and gentry, ſelecting the moſt convivial, and a few hard-drinkers who were all in the plot. Heidegger was invited, and in a few hours after dinner was made ſo dead drunk that he was carried out of the room, and laid inſenſible upon a bed. A profound ſleep enſued, when the late Mrs Salmon's daughter was introduced, who took a mould from his face in plaſter of Paris. From this a maſk was made, and a few days before the next maſquerade (at which the king promiſed to be preſent, with the counteſs of Yarmouth) the duke made application to Heidegger's valet-de-chambre, to know what ſuit of clothes he was likely to wear; and then procuring a ſimilar dreſs, and a perſon of the ſame ſtature, he gave him his inſtructions. On the evening of the maſquerade, as ſoon as his majeſty was ſeated (who was always known by the conductor of the entertainment and the officers of the court, though concealed by his dreſs from the company), Heidegger, as uſual, ordered the muſic to play "God ſave the king;" but his back was no ſooner turned, than the falſe Heidegger ordered them to ſtrike up "Charly o'er the water." The whole company were inſtantly thunderſtruck, and all the courtiers not in the plot were thrown into a ſtupid conſternation. Heidegger flew to the muſic-gallery, ſwore, ſtamped, and raved, accuſing the muſicians of drunkenneſs, or of being ſet on by ſome ſecret enemy to ruin him. The king and the counteſs laughed ſo immoderately, that they hazarded a diſcovery. While Heidegger ſtaid in the gallery, "God ſave the king" was the tune; but when, after ſetting matters to rights, he retired to one of the dancing-rooms, to obſerve if decorum was kept by the company, the counterfeit ſtepping forward, and placing himſelf upon the floor of the theatre, juſt in front of the muſic-gallery, called out in a moſt audible voice, imitating Heidegger, damned them for blockheads, had he not juſt told them to play "Charly o'er the water?" A pauſe enſued; the muſicians, who knew his character, in their turn thought him either drunk or mad; but as he continued his vociferation, "Charly" was played again. At this repetition of the ſuppoſed affront, ſome of the officers of the guards, who always attended upon theſe occaſions, were for aſcending the gallery and kicking the muſicians out; but the late duke of Cumberland, who could hardly contain himſelf, interpoſed. The company were thrown into great confuſion "Shame! Shame!" reſounded from all parts, and Heidegger once more flew in a violent rage to that part of the theatre facing the gallery. Here the duke of Montagu, artfully addreſſing himſelf to him, told him, "The king was in a violent paſſion; that his beſt way was to go inſtantly and make an apology, for certainly the muſicians were mad, and afterwards to diſcharge them." Almoſt at the ſame inſtant, he ordered the falſe Heidegger to do the ſame. The ſcene now became truly comic in the circle before the king. Heidegger had no ſooner made a genteel apology for the inſolence of his muſicians, but the falſe Heidegger advanced, and, in a plaintiff tone, cried out, "Indeed, Sir, it was not my fault, but that devil's in my likeneſs." Poor Heidegger turned round, ſtared, ſtaggered, grew pale, and could not utter a word. The duke then humanely whiſpered in his ear the ſum of his plot, and the counterfeit was ordered to take off his maſk. Here ended the frolic; but Heidegger ſwore he would not attend any public amuſement, if that witch the wax-work woman did not break the mould, and melt down the maſk before his face.

Being once at ſupper with a large company, when a queſtion was debated, Which nation in Europe had the greateſt ingenuity? to the ſurpriſe of all preſent, he claimed that character for the Swiſs, and appealed to himſelf for the truth of it. "I was born a Swiſs (ſaid he), and came to England without a farthing, where I have found means to gain 5000l. a-year, and to ſpend it. Now I defy the moſt able Engliſhman to go to Switzerland, and either to gain that income or to ſpend it there."—Heidegger is ſaid to have had ſo remarkable a memory, that he once walked from Charing-croſs to Temple-bar, and back again; and when he came home, wrote down every ſign on each ſide of the ſtreet.

ter having ſtudied at Goſlar and Leipſick, he was deſigned for the miniſtry, and began to preach; but diſliking that profeſſion, he laid it aſide, and applied himſelf entirely to the ſtudy of philoſophy and the civil law. In 1710, he became profeſſor of philoſophy at Hall; and in 1721, he was made profeſſor of civil law, with the title of *counſellor of the court.* His great reputation made the ſtates of Frieſland invite him to Franneker in 1724; but three years after, the king of Pruſſia prevailed on him to accept of a profeſſorſhip of law at Francfort on the Oder, where he diſtinguiſhed himſelf till the year 1733. Becoming again profeſſor at Hall, he remained there till his death, which happened in 1741, notwithſtanding his being invited to Marpurg, Denmark, and three academies in Holland. He wrote many works, all of them much eſteemed. The principal are, 1. *Antiquitatum Romanarum juriſprudentium illuſtratum ſyntagma.* It was this excellent abridgment that gave riſe to his reputation in foreign countries. 2. *Elementa juris civilis ſecundum ordinem inſtitutionum & pandectarum.* 3. *Fundamenta ſtyli cultioris.* There are few works ſo uſeful as this for forming a Latin ſtyle. 4. *Elementa philoſophiæ rationalis & moralis, quibus præmiſſa hiſtoria philoſophica.* 5. *Hiſtoria juris civilis Romani ac Germanici.* 6. *Elementa juris naturæ & gentium,* &c.

HEINETKEN (Chriſtian), an extraordinary child, the prodigy of the North, was born at Lubeck in 1721. He ſpoke his maternal tongue fluently at 10 months. At one year old, he knew the principal events of the pentateuch; in two months more he was maſter of the entire hiſtory of the Old and New-Teſtaments: at two years an an half, he anſwered the principal queſtions in geography and in ancient and modern hiſtory; and he ſpoke Latin and French with great facility before the commencement of his fourth year. His conſtitution was ſo delicate, that he was not weaned till a few months before his death. M. Martini of Lubec publiſhed a pamphlet in 1730, in which he endeavoured to give natural reaſons for the extraordinary capacity of this infant, who died in his fifth year.

HEINSIUS (Daniel), profeſſor of politics and hiſtory at Leyden, and Librarian to the univerſity there, was born at Gand in Flanders in 1580. He became a ſcholar to Joſeph Scaliger at Leyden, and was indebted to the encouragement and care of that great man for the perfection to which he attained in literature, and which at the beginning of his life there was little reaſon to hope from him. He diſtinguiſhed himſelf as a critic by his labours on many claſſical authors; and was highly honoured as well abroad as at home: Guſtavus Adolphus king of Sweden gave him a place among his counſellors of ſtate; the republic of Venice made him a knight of the order of St Mark; and pope Urban VIII. made him great offers, if he would come, as he expreſſed it, "to reſcue Rome from barbariſm." He died in 1666, leaving ſeveral works of his own, both in poetry and proſe.

Heinsius (Nicholas), the ſon of Daniel Heinſius, was born at Leyden; and became as great a Latin poet, and a greater critic, than his father. His poems have been ſeveral times printed, but the beſt edition is that of Amſterdam in 1666. He gave editions of ſeveral of the claſſics, with notes; his Claudian is dedicated in a Latin poem to queen Chriſtina of Sweden, and his Ovid to Thuanus. At his death, which happened in 1681, he diſclaimed all his works, and expreſſed the utmoſt regret at having left behind him ſo many "monuments of his vanity," as he called them. He was as much diſtinguiſhed by his great employments in the ſtate, as by his talents, learning, and good qualities.

HEIR, in law, ſignifies the perſon who ſucceeds another by deſcent to lands, tenements, and hereditaments, being an eſtate of inheritance, or an eſtate in fee; becauſe nothing paſſes by right of inheritance but in fee. See the articles Consanguinity, Descent, Fee, Succession; and Law, N° lxxvi. & clxxx. *et ſeq.*

Heir-Apparent, is a perſon ſo called in the lifetime of his anceſtor, at whoſe death he is heir at law.

Heir-Preſumptive, is one who, if the anceſtor ſhould die immediately, would, in the preſent circumſtances of things, be his heir; but whoſe right of inheritance may be defeated by the contingency of ſome nearer heir being born.

Heir-Loom, (formed of heir and the Saxon *loom,* denoting *limb* or *members*) in our law-books, ſignifies ſuch goods and perſonal chattels as are not inventoried after the owner's deceaſe, but neceſſarily come to the heir along with the houſe.

Heir-loom comprehends divers implements; as tables, preſſes, cupboards, bedſteads, furnaces, wainſcot, and ſuch like; which in ſome countries have belonged to a houſe for certain deſcents, and are never inventoried after the deceaſe of the owner as chattles are, but accrue by cuſtom, not by common law, to the heir, with the houſe itſelf. The ancient jewels of the crown are held to be heir-looms, and are not deviſable by will, but deſcend to the next ſucceſſor.

HEIRESS, a female heir to one who has an eſtate in lands, &c. See Heir.

Stealing an Heiress. See *Forcible Marriage.*

HEIRSHIP moveables, in Scots law, the beſt of certain kinds of moveables, which the heir of line is intitled to take, beſides the heritable eſtate. See Law, N° clxxx. 7.

HEISTERIA, in botany: A genus of the monogynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 12th order, *Holoraceæ.* The calyx is quinquefid, the petals five; the fruit is a plum on a very large coloured calyx.

HELENA, or St Helena, an iſland in the Atlantic Ocean, belonging to the Engliſh Eaſt India company, and ſituated in W. Long 6. 30. S. Lat. 16. The greateſt length of the iſland is about eight miles, and its circumference about 20. It hath ſome high mountains, particularly one called *Diana's peak,* which is covered with woods to the very top. Other hills there are which bear evident marks of a volcanic origin; and ſome have huge rocks of lava, and a kind of half-vitrified flags. The country, according to Mr Forſter, has a fine appearance; the ſoil is in many places a rich mould, from ſix to ten inches deep, and a variety of plants thrive in it luxuriantly. He found many plants here which he had not obſerved in other parts of the world. Among theſe were ſome called by the natives *cabbage-trees, gum-trees,* and *redwood.* The former thrive in moiſt places; but the latter are always found on the ridges of hills, where the ſoil is dry. The cabbage-tree has rather large leaves; but after many inquiries Mr Forſter could not find that it was uſed for any other purpoſe than that of fuel, and no reaſon could be aſſigned why it had obtained that name. It muſt not be confounded with the cabbage-tree of America, India, and the South Seas, which is a ſpecies of palm.

The iſland is laid out entirely in gardens and paſturage. Peaches are the only European fruits that thrive here. Cabbages and other greens, which thrive extremely well, are devoured by caterpillars; and every ſpecies of corn is deſtroyed by rats. All the paſtures were over-run with furze; which, though in our country a very uſeleſs and even pernicious plant, was of ſingular advantage to the inhabitants of St Helena. Before the introduction of that plant, the ground was parched by the intenſe heat, and all kinds of graſs and herbage were ſhrivelled up. But the furze-buſhes, which throve as it were in deſpight of the ſun, preſerved a degree of moiſture in the ground; by which means the graſs ſprung up vigorouſly, and the country became covered with a rich and beautiful ſod. The furze is now no longer wanted, and the people aſſiduouſly root it out for fuel. The number of people on St Helena does not exceed 2000 perſons, including 500 ſoldiers and 600 ſlaves; and it is ſaid that the number of females born on the iſland conſiderably exceeds that of the males. By the arrival of the India ſhips, which they ſupply with refreſhments, they are in return provided with all ſorts of manufactures and other neceſſaries; and the Company annually order one or two of their ſhips to touch there in their way to India, in order to ſend them a ſufficient quantity of European goods and proviſions. Many of their ſlaves are employed in catching fiſh, which are very plentiful; and, by the help of theſe, together with their poultry, cattle, roots, and ſalt proviſions, they ſubſiſt through the year. Their life (ſays Mr Forſter) ſeems to paſs along very happily; free from the multitude of cares which diſtreſs their countrymen in England, and bleſſed with quiet and content.

St Helena was firſt diſcovered by the Portugueſe in 1502, on St Helen's day; whence its name. They ſtocked it with different kinds of uſeful animals; but whether they ever ſettled a colony on it or not, is uncertain. The Portugueſe having either abandoned or never taken poſſeſſion of it, the Dutch became its maſters; and kept poſſeſſion of it till the year 1600, when they were driven out by the Engliſh. In 1673, the Dutch took it by ſurpriſe; but a ſhort time after it was recovered by the brave captain Munden, who alſo took three Dutch Eaſt Indiamen then lying in the harbour. On this occaſion the Hollanders had fortified the landing-place, of which there is only one on the iſland; and erected batteries of great guns to prevent a deſcent: but the Engliſh having knowledge of a ſmall creek, where only two men abreaſt could creep up, climbed to the top of the rock in the night; and appearing the next morning behind the batteries, the Dutch were ſo terrified, that they threw down their arms, and ſurrendered at diſcretion. This creek has been ſince fortified, and a battery of large cannon placed at the entrance of it; ſo that now the iſland is rendered perfectly ſecure againſt all regular approaches or ſudden attacks.

HELEN, (in fab. hiſt.) the daughter of Tyndarus and Leda, was married to Menelaus king of Sparta, but was ſtolen from him by Theſeus, 1235 B. C. She was reſtored ſoon after; but carried off again by Paris, the Trojan prince; which occaſioned the famous Trojan war. See TROY.

St. Helen's. See HELENA.

HELENIUM, BASTARD SUN-FLOWER: A genus of the polygamia ſuperflua order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order, *Compoſitæ*. The receptacle is naked in the middle; under the radius paleaceous; the pappus conſiſts of five ſhort awns; the calyx is ſimple and multipartite; the florets of the radius ſemitrifid.

Species. 1. The autumnale, with ſpear-ſhaped narrow leaves. 2. The latifolium, with pointed, ſpear-ſhaped, ſawed leaves.—Both theſe are natives of North America, where they grow wild in great plenty. They riſe to the height of ſeven or eight feet in good ground. The roots, when large, ſend up a great number of ſtalks, which branch toward the top; the upper part of the ſtalk ſuſtains one yellow flower, ſhaped like the ſun-flower, but much ſmaller, having long rays, which are jagged pretty deep into four or five ſegments.

Culture. Theſe plants may be propagated by ſeeds, or by parting their roots; the latter is generally practiſed in this country. The beſt ſeaſon to tranſplant and part the old roots is in October when their leaves are paſt, or in the beginning of March juſt before they begin to ſhoot. They delight in a ſoil rather moiſt than dry, provided it is not too ſtrong, or does not hold the wet in winter.

HELENUS (fab. hiſt.), a celebrated ſoothſayer, ſon of Priam and Hecuba. He was greatly reſpected by all the Trojans. When Deiphobus was given in marriage to Helen in preference to himſelf, he reſolved to leave his country, and retired to mount Ida, where Ulyſſes took him priſoner by the advice of Calchas. As he was well acquainted with futurity, the Greeks made uſe of prayers, threats, and promiſes, to induce him to reveal the ſecrets of the Trojans; and either the fear of death, or gratification of reſentment, ſeduced him to diſcloſe to the enemies of his country, that Troy could not be taken whilſt it was in poſſeſſion of the Palladium, nor before Polydectes came from his retreat at Lemnos and aſſiſted to ſupport the ſiege. After the ruin of his country, he fell to the ſhare of Pyrrhus the ſon of Achilles, and ſaved his life by warning him to avoid a dangerous tempeſt, which in reality proved fatal to all thoſe who ſet ſail. This endeared him to Pyrrhus; and he received from his hand Andromache the widow of his brother Hector, by whom he had a ſon called *Ceſtrinus*. This marriage, according to ſome, was conſummated after the death of Pyrrhus, who lived with Andromache as with a wife. Helenus was the only one of Priam's ſons who ſurvived the ruin of his country. After the death of Pyrrhus he reigned over part of Epirus, which he called *Chaonia* in memory of his brother Chaon, whom he had inadvertently killed. Helenus received Æneas as he voyaged towards Italy, and foretold him ſome of the calamities which attended his fleet. The manner in which he received the gift of propheſy is doubtful.

HELEPOLIS, in the ancient art of war, a machine for battering down the walls of a place beſieged, the invention of which is aſcribed to Demetrius Poliorcetes.—Diodorus Siculus ſays, that each ſide of the Helepolis was 405 cubits in breadth, and 90 in height; that it had nine ſtages, and was carried on four ſtrong ſolid wheels eight cubits in diameter; that it was armed with large battering rams, and had two roofs capable of ſupporting them; that in the lower ſtages there were different ſorts of engines for caſting ſtones; and in the middle they had large catapultas for diſcharging arrows, and ſmaller ones in thoſe above, with a number of expert men for working all theſe machines.

HELIADES, in mythology, the daughters of the Sun and Clymenes, according to the poets. They were ſo afflicted, as they ſay, with the death of their brother Phaeton, that the gods, moved with compaſſion, transformed them into poplars on the banks of the river Eridanus.

HELLÆA, in Grecian antiquity, was the greateſt and moſt frequented court in Athens for the trial of civil affairs. See HELIASTÆ.

HELIACAL, in aſtronomy, a term applied to the riſing and ſetting of the ſtars; or more ſtrictly ſpeaking, to their emerſion out of and immerſion into the rays and ſuperior ſplendor of the ſun.—A ſtar is ſaid to riſe heliacally, when, after having been in conjunction with the ſun, and on that account inviſible, it comes to be at ſuch a diſtance from him as to be ſeen in the morning before ſun-riſing; the ſun, by his apparent motion, receding from the ſtar towards the eaſt. On the contrary, the heliacal ſetting is when the ſun approaches ſo near a ſtar as to hide it with his beams, which prevents the fainter light of the ſtar from being perceived; ſo that the terms *apparition* and *occultation* would be more proper than *riſing* and *ſetting*.

HELIANTHUS, the GREAT SUNFLOWER: A genus of the polygamia fruſtanea order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order, *Compoſitæ*. The receptacle is paleaceous and plane; the pappus diphyllous; the calyx imbricated; the ſcales ſtanding a little out at the tops. There are 12 ſpecies, moſt of which are now very common in Britain, though all of them are natives of America. They are all very hardy, and will proſper in almoſt any ſoil or ſituation. They may be propagated either by ſeeds or by parting their roots.

HELIASTÆ, in antiquity, the judges of the court HELIÆA. They were ſo called, according to ſome authors, from a Greek word which ſignifies *to aſſemble in a great number*; and, according to others, from another word which ſignifies the *ſun*, becauſe they held their aſſemblies in an open place. They compoſed not only the moſt numerous, but likewiſe the moſt important of the Athenian tribunals; for their province was either to explain the obſcure laws, or to give new vigour and authority to thoſe which had been violated. The Theſmothetæ convoked the aſſembly of the Heliaſtæ, which ſometimes amounted to 1000, ſometimes to 1500, judges. M. Blanchard is of opinion, that to make this number, the Theſmothetæ ſometimes ſummoned thoſe of each tribe who had laſt quitted the public offices which they had exerciſed in another court.

However that may be, it appears that the aſſemblies of the Heliaſtæ were not frequent, as they would have interrupted the juriſdiction of the ſtated tribunals and the common courſe of affairs.

The Theſmothetæ paid to each member of this aſſembly, for his attendance, three oboli: which are equal to two Roman ſeſterces, or to half a drachma. Hence Ariſtophanes, terms them *the brothers of the triobulus*. They were likewiſe condemned to pay a fine if they came too late; and if they did not preſent themſelves till after the orators had begun to ſpeak, they were not admitted. Their attendance was requitted out of the public treaſury, and their pay was called *miſthos heliaſticus*.

The aſſembly met, at firſt, according to Ariſtophanes, at the riſing of the ſun. If the judges were obliged to meet under cover on account of froſt and ſnow, they had a fire; but there is not a paſſage in any ancient author which informs us of the place where theſe aſſemblies were held either in the rigorous or in the mild ſeaſons. We only learn, that there was a double encloſure around the aſſembly, that it might not be diſturbed. The firſt was a kind of arborwork, from ſpace to ſpace, ſeparated by doors, over which were painted in red the ten or twelve firſt letters of the Greek alphabet, which directed the entrance of the officers who compoſed the tribunal, each of them entering under the letter which diſtinguiſhed his tribe. The beadles of the court, to whom they ſhowed the wands which had been ſent them by the Theſmothetæ as a ſummons to meet, examined its mark, to ſee if it was authentic, and then introduced them. The ſecond incloſure, which was at the diſtance of 20 feet from the former, was a rope or cord; that the people who ſtood round the firſt incloſure, and were deſirous to ſee what paſſed within the ſecond, might not be prevented from gratifying their curioſity at a proper diſtance. Thus the attention of the judges was not interrupted by the concourſe of the multitude, many of whom were heated by views of intereſt or of party.

To each of the members of the aſſembly were diſtributed two pieces of copper; one of which was perforated, not certainly that it might be diſtinguiſhed from the other by feeling, for theſe aſſemblies met at the riſing and were diſſolved at the ſetting of the ſun. Thoſe pieces of copper had been ſubſtituted for little ſea-ſhells, which were at firſt in uſe. The king was preſent at the aſſembly, at whoſe command it had been ſummoned. The Theſmothetæ read the names of thoſe who were to compoſe it, and each man took his place as he was called. The Theſmothetæ were then ſent for, whoſe function it was to obſerve prodigies and to ſuperintend the ſacrifices; and if they gave their ſanction, the deliberations were begun. It is well known, that the officers called *Exegetæ* were often corrupted by thoſe who were intereſted in the debates of the aſſembly; and that they excited ſuch tumults as were raiſed by the Roman tribunal in the popular aſſemblies convoked by the conſuls.

Of all the monuments which remain relating to the Heliaſtæ, the moſt curious is the oath which thoſe judges took before the Theſmothetæ: Demoſthenes hath preſerved it in his oration againſt Timocrates, who having been bribed by thoſe who had been intruſted with the effects taken on board a veſſel of Naucratis, and refuſed to give an account of them, got a law paſſed, by which an enlargement was granted to priſoners for public debts on giving bail. Demoſthenes, in making his oration againſt that law, ordered the oath of the Heliaſtæ to be read aloud, as a perpetual auxiliary to his arguments, and happily calculated to intereſt the multitude and inflame their paſſions. This oath we ſhall quote, that our readers may know how reſpectable a tribunal that of the Heliaſtæ was, and the importance of their deciſions.

“I will judge according to the laws and decrees of the people of Athens, and of the ſenate of 500. I will never give my vote for the eſtabliſhment of a tyrant, nor of an oligarch. Nor will I ever give my approbation to an opinion prejudicial to the liberty or to the union of the people of Athens. I will not ſecond thoſe perſons who may propoſe a reduction of private debts, or a diſtribution of the lands or houſes of the Athenians. I will not recal exiles, nor endeavour to procure a pardon for thoſe who ſhall be condemned to die. Nor will I force thoſe to retire whom the laws and the ſuffrages of the people ſhall permit to remain in their country. I will not give my vote to any candidate for a public function who gives not an account of his conduct in the office which he has previouſly filled; nor will I preſume to ſolicit any truſt from the commonwealth without ſubjecting myſelf to this condition, which I mean as obligatory to the nine archons, to the chief of religious matters, to thoſe who are balloted on the ſame day with the nine archons, to the herald, the ambaſſador, and the other officers of their court. I will not ſuffer the ſame man to hold the ſame office twice, or to hold two offices in the ſame year. I will not accept any preſent, either myſelf or by anoother, either directly or indirectly, as a member of the Heliaſtic aſſembly. I ſolemnly declare that I am 30 years old. I will be equally attentive and impartial to the accuſer and the accuſed; I will give my ſentence rigorouſly according to evidence. Thus I ſwear, by Jupiter, by Neptune, and by Ceres, to act. And if I violate any of my engagements, I imprecate from theſe deities ruin on myſelf and my family; and I requeſt them to grant me every kind of proſperity, if I am faithful to my oath.”

The reader ſhould peruſe what follows this oath to ſee with what eloquence Demoſthenes avails himſelf of it, and how he applies its principles to the cauſe which he defends.

Here we have one of the motives of the meeting of this aſſembly. Ariſtotle informs us of another, which was by the public authority deputed to them, to elect a magiſtrate in the room of one dead. It is ſurpriſing, that Pauſanias, who enters ſo often into details, gives us no particular account of this aſſembly. All that he ſays of it is, that the moſt numerous of the Athenian aſſemblies was called *Helicè*.

We are told by Diogenes Laertius, in his life of Solon, that it was before one of theſe Heliaſtic aſſemblies that Piſiſtratus preſented himſelf, covered with wounds and contuſions (for thus he had treated himſelf and the mules which drew his car), to excite the indignation of the people againſt his pretended enemies, who, jealous, as he alleged, of the popularity he had acquired by aſſerting the rights of his poorer fellow citizens, in oppoſition to the men in power, had attacked him while he was hunting, and had wounded him in that barbarous manner. His deſign ſucceeded: a guard was appointed him; by the aſſiſtance of which he acquired the ſovereignty or tyranny of Athens, and kept it 33 years. The power of the aſſembly appeared remarkable on that occaſion; for Solon, who was preſent, oppoſed it with all his efforts, but did not ſucceed.

As to the manner in which the judges gave their ſuffrages, there was a ſort of veſſel covered with an oſier mat, in which were placed two urns, the one of copper, the other of wood. In the lid of theſe urns there was an oblong hole, which was large at the top, and grew narrower downwards, as we ſee in ſome old boxes of churches. The ſuffrages which condemned the accuſed perſon were thrown into the wooden urn, which was termed *kyrios*. That of copper, named *akyrios*, received thoſe which abſolved him.

Ariſtotle obſerves, that Solon, whoſe aim was to make his people happy, and who found an ariſtocracy eſtabliſhed by the election of the nine archons (annual officers, whoſe power was almoſt abſolute), tempered their ſovereignty, by inſtituting the privilege of appealing from *them* to the people, who were to be aſſembled by lot to give their ſuffrage; after having taken the oath of the Heliaſtæ, in a place near the Panathenæum; where Hiſſus had, in former days, calmed a ſedition of the people, and bound them to unanimity by an oath. It has likewiſe been remarked that the god Apollo was not invoked in the oath of the Heliaſtæ, as in the oaths of the other judges. We have obſerved, that he who took the oath of the Heliaſtæ, engaged that he would not be corrupted by ſolicitation or money. Thoſe who violated this part of their oath were condemned to pay a ſevere fine. The decemvirs at Rome made ſuch corruption a capital crime. But Aſcanius remarks, that the puniſhment denounced againſt them was mitigated in later times; and that they were expelled the ſenate, or baniſhed for a certain time, according to the degree of their guilt.

HELICON, in ancient geography, the name of a mountain in the neighbourhood of Parnaſſus and Cytheron, ſacred to Apollo and the muſes, who are thence called *Heliconides*. It is ſituated in Livadia, and now called *Zagura* or *Zaguya*.—Helicon was one of the moſt fertile and woody mountains in Greece. On it the fruit of the adrachnus, a ſpecies of the arbutus or of the ſtrawberry-tree, was uncommonly ſweet; and the inhabitants affirmed, that the plants and roots were all friendly to man, and that even the ſerpents had their poiſon weakened by the innoxious qualities of their food. It approached Parnaſſus on the north, where it touched on Phocis; and reſembled that mountain in loftineſs, extent, and magnitude.—Here was the ſhady grove of the muſes and their images; with ſtatues of Apollo and Bacchus, of Linus and Orpheus, and the illuſtrious poets who had recited their verſes to the harp. Among the tripods, in the ſecond century, was that conſecrated by Heſiod. On the left-hand going to the grove was the fountain Aganippe; and about twenty ſtadia, or two miles and a half higher up, the violet-coloured Hippocrene. Round the grove were houſes. A feſtival was celebrated there by the Theſpians with games called *Muſea*. The vallies of Helicon are deſcribed by Wheler as green and flowery in the ſpring; and enlivened by pleaſing caſcades and ſtreams, and by fountains and wells of clear water. The Bœotian cities in general, two or three excepted, were reduced to inconſiderable villages in the time of Strabo. The grove of the muſes was plundered under the auſpices of Conſtantine the Great. The Heliconian goddeſſes were afterwards conſumed in a fire at Conſtantinople, to which city they had been removed. Their ancient ſeat on the mountain, Aganippe and Hippocrene, are unaſcertained.

HELICONIA, in botany; a genus of the monogynia order, belonging to the pentandria claſs of plants. The ſpatha is univerſal and partial; there is no calyx; the corolla has three petals, and the nectarium two leaves; the capſule is three-grained.

HELICTERES, the SCREW-TREE: A genus of the decandria order, belonging to the gynandria claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ*. The calyx is monophyllous and oblique; there are five petals, and the nectarium conſiſts of five petal-like leaflets; the capſules are intorted or twiſted inwards.—There are four ſpecies, all natives of warm climates. They are ſhrubby plants, riſing from five to fourteen feet in height, adorned with flowers of a yellow colour. They are propagated by ſeeds; but are tender, and in Britain muſt be kept in a ſtove during the winter.

HELIOCARPUS, in botany: A genus of the digynia order, belonging to the dodecandria claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ*. The calyx is tetraphyllous; the petals four; the ſtyles ſimple; the capſule bilocular, compreſſed, and radiated lengthwiſe on each ſide.

HELIOCENTRIC LATITUDE *of a Planet*, the inclination of a line drawn between the centre of the ſun and the centre of a planet to the plane of the ecliptic.

HELIOCENTRIC Place of a Planet, the place of the ecliptic wherein the planet would appear to a ſpectator placed at the centre of the ſun.

HELIOCOMETES, a phenomenon ſometimes obſerved about ſun-ſetting; being a large luminous tail or column of light proceeding from the body of the ſun, and dragging after it, not unlike the tail of a comet; whence the name.

HELIODORUS *of* PHOENICIA, biſhop of Trica in Theſſaly, better known by the romance he compoſed in his youth intitled *Æthiopics*, and relating the amours of Theagenes and Chariclea. Some ſay he was depoſed by a ſynod, becauſe he would not conſent to the ſuppreſſing that romance. The fable has a moral tendency, and particularly inculcates the virtue of chaſtity. As it was the firſt of this ſpecies of writing, he is ſtyled the *Father of Romances*. He was alſo a good Latin poet. He lived in the 4th century.

HELIOMETER, formed of ηλιος *ſun*, and μετρω I *meaſure*, the name of an inſtrument called alſo *aſtrometer*, invented by M. Bouguer in 1747, for meaſuring with particular exactneſs the diameters of the ſtars, and eſpecially thoſe of the ſun and moon.

This inſtrument is a kind of teleſcope, conſiſting of two object-glaſſes of equal focal diſtance, placed one of them by the ſide of the other, ſo that the ſame eye-glaſs ſerves for both. The tube of this inſtrument is of a conic form, larger at the upper end, which receives the two object-glaſſes, than at the lower, which is furniſhed with an eye-glaſs and micrometer. By the conſtruction of this inſtrument two diſtinct images of an object are formed in the focus of the eye-glaſs, whoſe diſtance, depending on that of the two object-glaſſes from one another, may be meaſured with great accuracy: nor is it neceſſary that the whole diſc of the ſun or moon come within the field of view; ſince, if the images of only a ſmall part of the diſc be formed by each object-glaſs, the whole diameter may be eaſily computed by their poſition with reſpect to one another: for if the object be large, the images will approach, or perhaps lie even over one another; and the object-glaſſes being moveable, the two images may always be brought exactly to touch one another, and the diameter may be computed from the known diſtance of the centres of the two glaſſes. Beſides, as this inſtrument has a common micrometer in the focus of the eye-glaſs, when the two images of the ſun or moon are made in part to cover one another, that part which is common to both the images may be meaſured with great exactneſs, as being viewed upon a ground that is only one half leſs luminous than itſelf: whereas, in general, the heavenly bodies are viewed upon a dark ground, and on that account are imagined to be larger than they really are. By a ſmall addition to this inſtrument, provided it be of a moderate length, M. Bouguer thought it very poſſible to meaſure angles of three or four degrees, which is of particular conſequence in taking the diſtance of ſtars from the moon. With this inſtru- M. Bouguer, by repeated obſervations, found that the ſun's vertical diameter, tho' ſomewhat diminiſhed by aſtronomical refraction, is longer than the horizontal diameter; and, in aſcertaining this phenomenon, he alſo found, that the upper and lower edges of the ſun's diſc are not ſo equally defined as the other parts; on this account his image appears ſomewhat extended in the vertical direction. this is owing to the decompoſition of light, which is known to conſiſt of rays differently refrangible in its paſſage through our atmoſphere. Thus the blue and violet rays which proceed from the upper part of the diſc at the ſame time with thoſe of other colours, are ſomewhat more refracted than the others, and therefore ſeem to us to have proceeded from a higher point; whereas on the contrary, the red rays proceeding from the lower edge of the diſc, being leſs refracted than the others, ſeem to proceed from a lower point; ſo that the vertical diameter is extended, or appears longer, than the horizontal diameter.

Mr Servington Savery diſcovered a ſimilar method of improving the micrometer, which was communicated to the Royal Society in 1743. See MICROMETER.

HELIOPHILA, in botany: A genus of the ſiliquoſa order, belonging to the tetradynamia claſs of plants; and in the natural method ranking under the 39th order, *Siliquoſæ*. There are two nectaria recurvated towards the veſicular baſe of the calyx.

HELIOPHOBI, a name given to the white negroes or albinos, from their averſion to the light of the ſun. See ALBINO.

HELIOPOLIS (anc. geog.), ſo called by Herodotus and Diodorus Siculus, by Moſes *On*, and in Jeremiah *Bethſemes*; a city of Egypt, to the ſouth-eaſt of the Delta, and eaſt of Memphis; of a very old ſtanding, its origin terminating in fable. Here ſtood the temple of the ſun, held in religious veneration. The city ſtood on an extraordinary mount, but in Strabo's time was deſolate. It gave name to the *Nomos Heliopolites*.—There was another *Heliopolis* in Cœloſyria, near the ſprings of the Orontes; ſo called from the worſhip of the ſun, which was in great vogue over all Syria.

HELIOSCOPE, in optics, a ſort of teleſcope, peculiarly fitted for viewing the ſun without hurting the eyes. See TELESCOPE.

As the ſun may be viewed through coloured glaſſes without hurt to the eyes, if the object and eye glaſſes of a teleſcope be made of coloured glaſs, as red or green, ſuch a teleſcope will become an helioſcope.

But Mr Huygens only uſed a plain glaſs, blackened at the flame of a candle on one ſide, and placed between the eye-glaſs and the eye; which anſwers the deſign of an helioſcope very well.

HELIOSTATA, in optics, an inſtrument invented by the late learned Dr S. Graveſande; who gave it this name from its fixing, as it were, the rays of the ſun in an horizontal direction acroſs the dark chamber all the while it is in uſe. See OPTICS *(Index.)*

HELIOTROPE (*heliotropium*), among the ancients, an inſtrument or machine for ſhowing when the ſun arrived at the tropics and the equinoctial line. This name was alſo uſed for a ſun-dial in general.

HELIOTROPE is alſo a precious ſtone, of a green colour, ſtreaked with red veins. Pliny ſays it is thus called, becauſe, when caſt into a veſſel of water, the ſun's rays falling thereon ſeem to be of a blood colour; and that, when out of the water, it gives a faint reflection of the figure of the ſun; and is as proper to obſerve eclipſes of the ſun as a helioſcope. The heliotrope is alſo called *oriental jaſper*, on account of its ruddy ſpots. It is found in the Eaſt Indies, as alſo in Ethiopia, Germany, Bohemia, &c. Some have aſcribed to it the faculty of rendering people inviſible, like Gyges's ring.

HELIOTROPIUM, TURNSOLE: A genus of the polygynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 41ſt order, *Aſperifoliæ*. The corolla is ſalver-ſhaped and quinquefid, with leſſer dents interjected alternately; the throat cloſed up by ſmall arches formed in the corolla itſelf. There are a number of ſpecies, all of them natives of warm countries. Only one, called the *tricoccum*, grows in Europe; and is a native of France, Spain, and Italy. It is only remarkable for the property of its berries, of which an account is given under COLOUR-*Making*, n° 36.

HELIX, in geometry, a ſpiral line. See SPIRAL. —The word is Greek, ἑλιξ, and literally ſignifies "a wreath or winding:" ἑλισσω *involvo*, "I environ."

In architecture, ſome authors make a difference between the helix and the ſpiral. A ſtair-caſe, according to Daviler, is in a helix, or is helical, when the ſtairs or ſteps wind round a cylindrical newel; whereas the ſpiral winds round a cone, and is continually approaching nearer its axis.

HELIX is alſo applied, in architecture, to the caulicules or little volutes under the flowers of the Corinthian capital; called alſo *urillæ*.

HELIX, in anatomy, is the whole circuit or extent of the auricle or border of the ear outwards. In oppoſition to which, the inner protuberance ſurrounded thereby, and anſwering thereto, is called *anthelix*. See ANATOMY, n° 141.

HELIX, the *Snail*, in zoology, a genus belonging to the order of vermes teſtacea. The ſhell conſiſts of one ſpiral, brittle, and almoſt diaphanous valve; and the aperture is narrow. There are 60 ſpecies, principally diſtinguiſhed by the figure of their ſhells. They are of various ſizes, from that of a ſmall apple to leſs than half a pea. Some of them live on land, frequenting woods and gardens, or inhabiting clefts of rocks and dry ſand-banks. Others of them are aquatic, inhabiting ponds, deep rivers, and the ocean. The principal ſpecies are,

1. The jacintha, with a violet-coloured ſhell, is remarkable for the extreme thinneſs of its texture, which breaks with the leaſt preſſure, and ſeems therefore entirely calculated to keep the open ſea, or at leaſt to ſhun rocky ſhores. It inhabits the ſeas of Europe, eſpecially the Mediterranean; thoſe of Aſia and Africa; and alſo the ocean. The living animal, when touched, exſudes a juice which ſtains the hands of a violet colour. Dr Hawkeſworth in his account of Cooke's voyage, miſtakes this ſhell for that which yielded the *purpura* of the ancients. But whoever looks into Pliny, can never have the leaſt idea that the thin ſhell aforementioned could be the ſame with it. They had ſeveral ſhells which yielded the purple dye: but theſe were all rock ſhells*, and very different both in figure and hardneſs from the little helix jacintha; which is not calculated for the neighbourhood of rocks, as already mentioned. *Vid.* Plin. lib. v. cap. 1. and lib. ix. cap. 60, 61. See alſo Don Ant. Ulloa's Voyage to South America, book iv. ch. 8.

2. The pomatia, or exotic ſnail, with five ſpires, moſt remarkably ventricoſe, and faſciated with a lighter and a deeper brown, is a native of France, where it inhabits the woods; but has been naturalized in England, where it inhabits the woods of the ſouthern counties. It was introduced, as it is ſaid, by Sir Kenelm Digby; whether for medical purpoſes, or as food, is uncertain: tradition ſays, that to cure his beloved wife of a decay was the object. They are quite confined to the ſouthern counties. An attempt was made to bring them into Northamptonſhire, but they would not live there.—Theſe are uſed as a food in ſeveral parts of Europe during Lent; and are preſerved in an eſcargatoire, or a large boarded place in, with a floor covered half a foot deep with herbs, in which the ſnails neſtle and fatten †.—They were alſo a favourite diſh with the Romans, who had their *cochlearia*, a nurſery ſimilar to the above. Fulvius Hirpinus ‡ was the firſt inventor of this luxury, a little before the civil wars between Cæſar and Pompey. The ſnails were fed with bran and ſodden wine. If we could credit Varro ||, they grew ſo large, that the ſhells of ſome would hold ten quarts! People need not admire the temperance of the ſupper of the young Pliny §, which conſiſted of only a lettuce a piece, three ſnails, two eggs, a barley-cake, ſweet wine and ſnow,—in caſe his ſnails bore any proportion in ſize to thoſe of Hirpinus.—Its name is derived not from any thing relating to an orchard, but from πωμα, an *operculum*, it having a very ſtrong one. This ſeems to be the ſpecies deſcribed by Pliny,

* See *Buccinum* and *Murex*.

† *Addiſon's Trav.* 272.

‡ *Pliny, l.* x. *c.* 56.

|| *L.* iii. *c.* 14.

§ *Epiſt.* xv.

Pliny, lib. viii. c. 39. which he ſays was ſcarce; that it covered itſelf with the opercle, and lodged under ground; and that they were at firſt found only about the maritime Alps, and more lately near Velitræ. [See Plate CCXXXIV. the figure half the natural ſize.]

3. The hortenſis, or garden-ſnail, is in form like the laſt, but leſs, and not umbilicated and clouded, or mottled with browns. It abounds with a viſcid ſlimy juice, which it readily gives out by boiling in milk or water, ſo as to render them thick and glutinous. The decoctions in milk are apparently very nutritious and demulcent, and have been recommended in a thin acrimonious ſtate of the humours, in conſumptive caſes and emaciations.

The eyes of ſnails are lodged in their horns, one at the end of each horn, which they can retract at pleaſure. The manner of examining theſe eyes, which are four in number, is this: when the horns are out, cut off nimbly the extremity of one of them; and placing it before the microſcope, you may diſcover the black ſpot at the end to be really a ſemiglobular eye.—The diſſection of this animal is very curious; for by this means the microſcope not only diſcovers the heart beating juſt againſt the round hole near the neck, which ſeems the place of reſpiration; but alſo the liver, ſpleen, ſtomach and inteſtines, with the veins, arteries, mouth, and teeth, are plainly obſervable. The guts of this creature are green, from its eating of herbs, and are branched all over with fine capillary white veins; the mouth is like a hare's or rabbit's, with four or ſix needle-teeth, reſembling thoſe of leeches, and of a ſubſtance like horn.--Snails are all hermaphrodites, having both ſexes united in each individual. They lay their eggs with great care in the earth, and the young ones are hatched with ſhells completely formed. Cutting off a ſnail's head, a little ſtone appears, which is ſuppoſed to be a great diuretic, and good in all nephritic diſorders. Immediately under this ſtone the heart is ſeen beating; and the auricles are evidently diſtinguiſhable, and are membranous, and of a white colour; as are alſo the veſſels which proceed from them.

Snails diſcharge their excrements at a hole in their neck; they alſo breathe by this hole, and their parts of generation are ſituated very near it. The penis is very long, and in ſhape reſembles that of a whale. In the proceſs of generation, it has been obſerved, that with the male and female part there iſſues, at the aperture of the neck, a kind of ſpear, ſhaped like the head of a lance, and terminating in a very acute point: and when the two ſnails turn the clefts in the necks towards each other, the ſpear iſſuing from one pricks the other, and then either drops to the ground or is carried off by the ſnail it has pricked. This ſnail inſtantly withdraws, but ſoon after rejoins the other which it pricks in its turn; and after ſuch mutual puncture, the copulation never fails of being conſummated. Snails are ſaid to couple three times at the diſtance of about fifteen days from each other. nature producing a new ſpear for each time of copulation, which laſts ten or twelve hours. At the end of about eighteen days they bring forth their eggs by the aperture of the neck.

So ſmall an animal as the ſnail is not free from the plague of ſupporting other ſmaller animals on its body; and as in other animals we find theſe ſecondary ones either living only on their ſurface, as lice, &c. or only in the inteſtines, as worms, it is very remarkable that this creature infeſts the ſnail in both theſe manners; being found ſometimes on the ſurface of its body and ſometimes within its inteſtines. There is a part of the common garden ſnail, and of other of the like kinds, commonly called the *collar*. This ſurrounds the neck of the ſnail, and is conſiderably thick, and is the only part that is viſible when the animal is retired quietly into its ſhell. In this ſtate of the animal theſe inſects, which infeſt it are uſually ſeen in conſiderable numbers marching about very nimbly on this part; beſides, the ſnail, every time it has occaſion to open its anus, gives them a place by which to enter into its inteſtines, and they often ſeize the opportunity.

Snails are great deſtroyers of fruit in our gardens, eſpecially the better ſorts of wall-fruit. Lime and aſhes ſprinkled on the ground where they moſt reſort will drive them away, and deſtroy the young brood of them: it is a common practice to pull off the fruit they have bitten; but this ſhould never be done, for they will eat no other till they have wholly eat up this if it be left for them.

HELL, the place of divine puniſhment after death.

As all religions have ſuppoſed a future ſtate of exiſtence after this life, ſo all have their hell or place of torment in which the wicked are ſuppoſed to be puniſhed. The hell of the ancient heathens was divided into two manſions; the one called *Elyſium*, on the right hand, pleaſant and delightful, appointed for the ſouls of good men; the other called *Tartarus*, on the left, a region of miſery and torment appointed for the wicked. The latter only was hell, in the preſent reſtrained ſenſe of the word. See Elysium.

The philoſophers were of opinion, that the infernal regions were at an equal diſtance from all the parts of the earth; nevertheleſs it was the opinion of ſome, that there were certain paſſages which led thither, as the river Lethe near the Syrtes, and the Acheruſian cave in Epirus. At Hermoine it was thought, that there was a very ſhort way to hell; for which reaſon the people of that country never put the fare into the mouths of the dead to pay their paſſage.

The Jews placed hell in the centre of the earth, and believed it to be ſituated under waters and mountains. According to them, there are three paſſages leading to it: the firſt is in the wilderneſs, and by that Korah, Dathan, and Abiram, deſcended into hell; the ſecond is in the ſea, becauſe Jonah, who was thrown into the ſea, cried out to God out of the belly of hell; the third is in Jeruſalem, becauſe it is ſaid the fire of the Lord is in Zion, and his furnace is in Jeruſalem. They likewiſe acknowledged ſeven degrees of pain in hell, becauſe they find this place called by ſeven different names in ſcripture. Though they believed that infidels, and perſons eminently wicked, will continue for ever in hell; yet they maintained, that every Jew who is not infected with ſome hereſy, and has not acted contrary to the points mentioned by the rabbins, will not be puniſhed therein for any other crimes above a year at moſt.

The Mahometans believe the eternity of rewards and puniſhments in another life. In the Koran it is ſaid, that hell has ſeven gates, the firſt for the Muſſulmans, the ſecond for the Chriſtians, the third for the Jews, the fourth for the Sabians, the fifth for the Magians,

the

the ſixth for the Pagans, and the ſeventh for the hypocrites of all religions.

Among Chriſtians, there are two controverted queſtions in regard to hell; the one concerns locality, the other the duration of its torments. 1. The locality of hell, and the reality of its fire, began firſt to be controverted by Origen. That father, interpreting the ſcripture account metaphorically, makes hell to conſiſt not in external puniſhments, but in a conſciouſneſs or ſenſe of guilt, and a remembrance of paſt pleaſures. Among the moderns, Mr Whiſton advanced a new hypotheſis. According to him the comets are ſo many hells appointed in their orbits alternately to carry the damned into the confines of the ſun, there to be ſcorched by its violent heat, and then to return with them beyond the orb of Saturn, there to ſtarve them in theſe cold and diſmal regions. Another modern author, not ſatisfied with any hypotheſis hitherto advanced, aſſigns the ſun to be the local hell. 2. As to the ſecond queſtion, viz. the duration of hell torments, we have Origen again at the head of thoſe who deny that they are eternal; it being that father's opinion, that not only men, but devils, after a due courſe of puniſhment ſuitable to their reſpective crimes, ſhall be pardoned and reſtored to heaven. The chief principle upon which Origen built his opinion, was the nature of puniſhment, which he took to be emendatory, applied only as phyſic for the recovery of the patient's health. The chief objection to the eternity of hell torments among modern writers, is the diſproportion between temporary crimes and eternal puniſhments. Thoſe who maintain the affirmative, ground their opinions on ſcripture accounts which repreſent the pains of hell under the figure of a worm which never dies, and a fire which is not quenched; as alſo upon the words, "Theſe ſhall go away into everlaſting puniſhment, but the righteous into life eternal."

HELLENICUS of Mitylene, a celebrated Greek hiſtorian, born before Herodotus, flouriſhed about 480 B. C. He wrote a hiſtory of the ancient kings and founders of cities, but which hath not come down to us.

HELLAS, (anc. geog.) an appellation compriſing, according to the more ancient Greeks and Romans Achaia and Peloponneſus, but afterwards reſtrained to Achaia. It was bounded on the weſt by the river Achelous, on the north by mounts Othrys and Oeta, on the eaſt by the Egean ſea, and on the ſouth by the Saronic and Corinthian bays, and by the iſthmus which joins it to Peloponneſus. It was called *Hellas* from Hellen the ſon of Deucalion; or from Hellas, a diſtrict of Theſſaly; whence *Hellenes* the gentilitious name, denoting Greeks. Now called *Livadia*.

HELLE, (fab. hiſt.) a daughter of Athamas king of Thebes by Nephele. She fled from her father's houſe with her brother Phryxus, to avoid the cruel oppreſſion of her mother-in-law Ino. According to ſome accounts ſhe was carried through the air on a golden ram, which her mother had received from Neptune, and in her paſſage ſhe became giddy and fell from her ſeat in that part of the ſea which from her received the name of *Helleſpont*. Others ſay, that ſhe was carried on a cloud or rather upon a ſhip, from which ſhe fell into the ſea and was drowned Phryxus after he had given his ſiſter a burial on the neighbouring coaſts, purſued his journey, and arrived in Colchis.

HELLEBORE. See HELLEBORUS.

White-HELLEBORE. See VERATRUM.

HELLEBORUS, HELLEBORE: A genus of the polygynia order belonging to the pentandria claſs of plants; and in the natural method ranking under the 26th order, *Multiſiliquæ*. There is no calyx but five or more petals; the nectaria are bilabiated and tubular; the capſules polyſpermous, and a little erect.

Species. The moſt remarkable ſpecies of this plant is the niger, commonly called *Chriſtmas roſe*. It hath roots compoſed of many thick fleſhy ſpreading fires, crowned by a large cluſter of lobed leaves, conſiſting each of ſeven or eight obtuſe fleſhy lobes, united to one foot ſtalk; and between the leaves ſeveral thick fleſhy flower-ſtalks three or four inches high, ſurmounted by large beautiful white flowers of five roundiſh petals, and numerous filaments, appearing in winter, about or ſoon after Chriſtmas.

Culture. This plant may be propagated either by ſeeds or parting the roots. It proſpers in the open borders, or may be planted in pots to move when in bloom in order to adorn any particular place; but it always flowers faireſt and moſt abundantly in the front of a warm ſunny border. The plants may be removed, and the roots divided for propagation, in September, October, or November; but the ſooner in autumn it is done, the ſtronger will the plants flower at their proper ſeaſon.

Uſes. The root of this plant was anciently uſed as a cathartic. The taſte of it is acrid and bitter. Its acrimony, as Dr Grew obſerves, is firſt felt on the tip of the tongue, and then ſpreads itſelf immediately to the middle, without being much perceived in the intermediate part. On chewing the root for a few minutes, the toungue ſeems benumbed, and affected with a kind of paralytic ſtupor, as when burnt by eating any thing too hot. The fibres are more acrimonious than the head of the root from whence they iſſue. Black hellebore root, taken from 15 to 30 grains, proves a ſtrong cathartic; and, as ſuch has been celebrated for the cure of maniacal and other diſorders proceeding from what the ancients called the *atrabilis*; in which caſes medicines of this kind are doubtleſs occaſionally of uſe though they are by no means poſſeſſed of any ſpecific power. It does not however appear, that our black hellebore acts with ſo much violence as that of the ancients; whence many have ſuppoſed it to be a different ſpecies of plant: and indeed the deſcriptions with the ancients have left us of the hellebore, do not agree with thoſe of any of the ſorts uſually taken notice of by modern botaniſts. Another ſpecies has been diſcovered in the eaſtern countries, which Tournefort diſtinguiſhes by the name of *helleborus niger orientalis, ampliſſimo folio, caule præalto flore purpuraſcente*, and ſuppoſes it to be the true ancient hellebore, from its growing in plenty about mount Olympus, and in the iſland of Anticyra, celebrated of old for the production of this antimaniacal drug: he relates, that a ſcruple of this ſort, given for a doſe, occaſioned convulſions.— Our hellebore is at preſent looked upon principally as an alterative; and in this light is frequently employed in ſmall doſes, for attenuating viſcid humours, promoting the uterine and urinary diſcharges, and opening inve-

Hellen || Hellenodicæ.

inveterate obſtructions of the remoter glands. It often proves a powerful emmenagogue in plethoric habits, where ſteel is ineffectual or improper. In ſome parts of Germany, a ſpecies of black hellebore has been made uſe of, which frequently produced violent, and ſometimes deleterious, effects. It appears to be the fetid kind of Linnæus, called in Engliſh *ſettlewort*, *ſetterwort*, or *baſtard hellebore*. The roots of this may be diſtinguiſhed from thoſe of the true kind, by their being leſs black.

HELLEN, the ſon of Deucalion, is ſaid to have given the name of Helleniſts to the people before called *Greeks*, 1521 B. C. See GREECE.

HELLENISM, in matters of language, a phraſe in the idiom, genius, or conſtruction of the Greek tongue.

This word is only uſed when ſpeaking of the authors who, writing in a different language, expreſs themſelves in a phraſeology peculiar to the Greek.

HELLENISTIC LANGUAGE, that uſed by the Grecian Jews who lived in Egypt and other parts where the Greek tongue prevailed. In this language it is ſaid the Septuagint was written, and alſo the books of the New Teſtament; and that it was thus denominated to ſhow that it was Greek filled with Hebraiſms and Syriaciſms.

HELLENISTS *(Helleniſtæ)*, a term occurring in the Greek text of the New Teſtament, and which in the Engliſh verſion is rendered Grecians.

The critics are divided as to the ſignificance of the word. Œcumenius, in his Scholia on Acts vi. 1. obſerves, that it is not to be underſtood as ſignifying thoſe of the religion of the Greeks, but thoſe who ſpoke Greek, τȣς ελληνιςι φθεγξαμενȣς. The authors of the Vulgate verſion, indeed, render it like ours, *Græci*; but Meſſieurs Du Port Royal more accurately, *Juifs Grecs*, Greek or Grecian Jews; it being the Jews who ſpoke Greek that are here treated of, and who are hereby diſtinguſhed from the Jews called *Hebrews*, that is, who ſpoke the Hebrew tongue of that time.

The Helleniſts, or Grecian Jews, were thoſe who lived in Egypt and other parts where the Greek tongue prevailed. It is to them we owe the Greek verſion of the Old Teſtament commonly called the *Septuagint*, or that of the ſeventy.

Salmaſius and Voſſius are of a different ſentiment with regard to the Helleniſts. The latter will only have them to be thoſe who adhered to the Grecian intereſts.

Scaliger is repreſented, in the Scaligerana, as aſſerting the Helleniſts to be the Jews who lived in Greece and other places, and who read the Greek Bible in their ſynagogue, and uſed the Greek language in *ſacris*; and thus they were oppoſed to the Hebrew Jews who performed their public worſhip in the Hebrew tongue; and, in this ſenſe St Paul ſpeaks of himſelf as a Hebrew of the Hebrews, Phil. iii. 5. *i. e.* a Hebrew both by nation and language. The Helleniſts are thus properly diſtinguiſhed from the *Hellenes* or Greeks, mentioned John xii. 20. who were Greeks by birth and nation, and yet proſelytes to the Jewiſh religion.

HELLENODICÆ, Ελληνοδικαι, in antiquity, the directors of the Olympian games. At firſt there was only one, afterwards the number increaſed to two and to three, and at length to nine. They aſſembled in a place called Ελληνοδικαιον in the Elean forum, where they were obliged to reſide ten months before the celebration of the games, to take care that ſuch as offered themſelvs to contend, performed their προγυμνασματα, or preparatory exerciſes, and to be inſtructed in all the laws of games by certain men called νομοφυλακες, i. e. "keepers of the law." And the better to prevent all unjuſt practices, they were further obliged to take an oath, that they would act impartially, would take no bribes, nor diſcover the reaſon for which they diſliked or approved of any of the contenders. At the ſolemnity they ſat naked, having before them the victorial crown till the exerciſes were finiſhed, and then it was preſented to whomſoever they adjudged it. Nevertheleſs, there lay an appeal from the hellenodicæ to the Olympian ſenate.

Helleſpont || Helm.

HELLESPONT, a narrow ſtrait between Aſia and Europe, near the Propontis, which received its name from HELLE who was drowned there in her voyage to Colchis. It is celebrated for the love and death of Leander, and for the bridge of boats which Xerxes built over it when he invaded Greece. The folly of this great prince is well known in beating and fettering the waves of the ſea, whoſe impetuoſity ſcattered his ſhips, and rendered all his labours ineffectual. It is now called the *Dardenelles*. It is about 33 miles long, and in the broadeſt parts the Aſiatic coaſt is about one mile and a half diſtance from the European, and only half a mile in the narroweſt, according to modern inveſtigation, and the cocks are heard crowing from the oppoſite ſhores.

HELLEN'S (St) a town of the Iſle of Wight in Eaſt-Medina, has a bay which runs a conſiderable way within land, and in a war with France is often the ſtation and place of rendezvous for the Engliſh navy. At the mouth of the bay is that cluſter of rocks called the *Mixen*. It had an old church ſituated at the extremity of the coaſt, which was endangered to be waſhed away, as was a great part of the church-yard, which occaſioned a new church to be built in 1719. The priory to which the old church belonged is now converted into a gentleman's ſeat; is in a remarkably pleaſant ſituation, and commands a fine proſpect of Portſmouth and the Road at Spithead. St Helen's appears to have been of more conſideration in former times than at preſent.

HELM, a long and flat piece of timber, or an aſſemblage of ſeveral pieces ſuſpended along the hinder-part of a ſhip's ſtern-poſt, where it turns upon hinges to the right or left, ſerving to direct the courſe of the veſſel, as the tail of a fiſh guides the body.

The helm is uſually compoſed of three parts, viz. the rudder, the tiller, and the wheel, except in ſmall veſſels, where the wheel is unneceſſary.

As to the form of the rudder, it becomes gradually broader in proportion to its diſtance from the top, or to its depth under the water. The back, or inner part of it, which joins to the ſtern-poſt, is diminiſhed into the form of a wedge throughout its whole length, ſo as that the rudder may be more eaſily turned from one ſide to the other, where it makes an obtuſe angle with the keel. It is ſupported upon hinges; of which thoſe that are bolted round the ſtern-poſt to the after-extremity of the ſhip, are called *googings*, and are furniſhed with a large hole on the after part of the ſtern-poſt. The other parts of the hinges, which are bolted to the back of the rudder, are called *pintles*, being ſtrong cylindrical pins, which enter into the googings, and reſt upon them. The length and thickneſs of the rudder is nearly equal to that of the ſtern-poſt.

The rudder is turned upon its hinges by means of a long ſtrap of timber, called the *tiller*, which is fixed horizontally in its upper end within the veſſel. The movements of the tiller to the right and left, accordingly, direct the efforts of the rudder to the government of the ſhip's courſe as ſhe advances, which, in the ſea-language, is called *ſteering*. The operations of the tiller are guided and aſſiſted by a ſort of tackle, communicating with the ſhip's ſide, called the *tiller-rope*, which is uſually compoſed of untarred rope-yarns for the purpoſe of traverſing more readily through the blocks or pullies.

In order to facilitate the management of the helm, the tiller-rope, in all large veſſels, is wound about a wheel, which acts upon it with the power of a crane or windlaſs. The rope employed in this ſervice being conveyed from the fore-end of the tiller *k*, to a ſingle block *i*, on each ſide of the ſhip †, is farther communicated to the wheel, by means of two blocks ſuſpended near the mizen-maſt, and two holes immediately above, leading up to the wheel, which is fixed upon an axis on the quarter-deck, almoſt perpendicularly over the fore-end of the tiller. Five turns of the tiller-rope are uſually wound about the barrel of the wheel; and, when the helm is amid-ſhip, the middle turn is nailed to the top of the barrel, with a mark by which the helmſman readily diſcovers the ſituation of the helm; as the wheel turns it from the ſtarboard to the larboard ſide. The ſpokes of the wheel generally reach about eight inches beyond the rim or circumference, ſerving as handles to the perſon who ſteers the veſſel. As the effect of a lever increaſes in proportion to the length of its arm, it is evident that the power of the helmſman to turn the wheel will be increaſed according to the length of the ſpokes beyond the circumference of the barrel.

† See *Deck*, Pl. CLVI.

Plate CCXXVI.

When the helm, inſtead of lying in a right line with the keel, is turned to one ſide or the other, as in BD, fig. 1. it receives an immediate ſhock from the water, which glides along the ſhip's bottom in running *aft* from A to B; and this fluid puſhes it towards the oppoſite ſide, whilſt it is retained in this poſition: ſo that the ſtern, to which the rudder is confined, receives the ſame impreſſion, and accordingly turns from B to *b* about ſome point *c*, whilſt the head of the ſhip paſſes from A to *a*. It muſt be obſerved, that the current of water falls upon the rudder obliquely, and only ſtrikes it with that part of its motion which acts according to the ſine of incidence, puſhing it in the direction NP, with a force which not only depends on the velocity of the ſhip's courſe, by which this current of water is produced, but alſo upon the extent of the ſine of incidence. This force is by conſequence compoſed of the ſquare of the velocity with which the ſhip advances, and the ſquare of the ſine of incidence, which will neceſſarily be greater or ſmaller according to circumſtances; ſo that if the veſſel runs three or four times more ſwiftly, the abſolute ſhock of the water upon the rudder will be nine or 16 times ſtronger under the ſame incidence: and, if the incidence is increaſed, it will yet be augmented in a greater proportion, becauſe the ſquare of the ſine of incidence is more enlarged. This impreſſion, or what is the ſame thing, the power of the helm, is always very feeble when compared with the weight of the veſſel; but as it operates with the force of a long lever, its efforts to turn the ſhip are extremely advantageous. For the helm being applied for a great diſtance from the centre of gravity G, or from the point about which the veſſel turns horizontally, if the direction PN of the impreſſion of the water upon the rudder be prolonged, it is evident that it will paſs perpendicularly to R, widely diſtant from the centre of gravity G: thus the abſolute effort of the water is very powerful. It is not therefore ſurpriſing that this machine impreſſes the ſhip with a conſiderable circular movement, by puſhing the ſtern from C to *b*, and the head from A to *a*; and even much farther whilſt ſhe ſails with rapidity, becauſe the effect of the helm always keeps pace with the velocity with which the veſſel advances.

Amongſt the ſeveral angles that the rudder makes with the keel, there is always one poſition more favourable than any of the others, as it more readily produces the deſired effect of turning the ſhip, in order to change her courſe. To aſcertain this, it muſt be conſidered, that if the obliquity of the rudder with the keel is greater than the obtuſe angle ABD, ſo as to diminiſh that angle, the action of the water upon the rudder will increaſe, and at the ſame time oppoſe the courſe of the ſhip in a greater degree; becauſe the angle of incidence will be more open, ſo as to preſent a greater ſurface to the ſhock of the water, by oppoſing its paſſage more perpendicularly. But at that time the direction NP of the effort of the helm upon the ſhip will paſs with a ſmaller diſtance from the centre of gravity G towards R, and leſs approach the perpendicular NL, according to which it is abſolutely neceſſary that the power applied ſhould act with a greater effect to turn the veſſel. Thus it is evident, that if the obtuſe angle ABD is too much incloſed, the greateſt impulſe of the water will not counterbalance the loſs ſuſtained by the diſtance of the direction NP from NL, or by the great obliquity which is given to the ſame direction NP of the abſolute effort of the helm with the keel AB. If, on the contrary, the angle ABD is too much opened, the direction NP of the force of the action of the helm will become more advantageous to turn the veſſel, becauſe it will approach nearer the perpendicular NL; ſo that the line prolonged from NP will increaſe the line GR, by removing R to a greater diſtance from the centre of gravity G: but then the helm will receive the impreſſion of the water too obliquely, for the angle of incidence will be more acute; ſo that it will only preſent a ſmall portion of its breadth to the ſhock of the water, and by conſequence will only receive a feeble effort. By this principle it is eaſy to conceive that the greateſt diſtance GR from the centre of gravity G, is not ſufficient to repair the diminution of force occaſioned by the too great obliquity of the ſhock of the water. Hence we may conclude, that when the water either ſtrikes the helm too directly, or too obliquely, it loſes a great deal of the effect it ought to produce. Between the two extremes there is therefore for a mean poſition, which is the moſt favourable to its operations.

The diagonal NP of the rectangle IL repreſents the abſolute direction of the effort of the water upon the helm. NI expreſſes the portion of this effort which is oppoſed to the ſhip's head-way, or which puſhes her aſtern, in a direction parallel to the keel. It is eaſily perceived, that this part NI of the whole power of the helm contributes but little to turn the veſſel; for, if IN is prolonged, it appears that its direction approaches to a very ſmall diſtance GV from the centre of gravity G; and that the arm of the lever BN=GV, to which the force is applied, is not in the whole more than equal to half the breadth of the rudder: but the relative force NL, which acts perpendicular to the keel, is extremely different. If the firſt NI is almoſt uſeleſs, and even pernicious, by retarding the velocity; the ſecond NL is capable of a very great effect, becauſe it operates at a conſiderable diſtance from the centre of gravity G of the ſhip, and acts upon the arm of a lever GE, which is very long. Thus it appears, that between the effects NL, and NI which reſult from the abſolute effort NP, there is one which always oppoſes the ſhip's courſe, and contributes little to her motion of turning; whilſt the other produces only this movement of rotation, without operating to retard her velocity.

Geometricians have determined the moſt advantageous angle made by the helm with the line prolonged from the keel, and fixed it at 45° 44′, preſuming that the ſhip is as narrow at her floating-line, or at the line deſcribed by the ſurface of the water round her bottom, as at the keel. But as this ſuppoſition is abſolutely falſe, inaſmuch as all veſſels augment their breadth from the keel upward to the extreme breadth where the floating-line or the higheſt water-line is terminated; it follows, that this angle is too large by a certain number of degrees. For the rudder is impreſſed by the water, at the height of the floating-line more directly than at the keel, becauſe the fluid exactly follows the horizontal outlines of the bottom; ſo that a particular poſition of the helm might be ſuppoſed neceſſary for each different incidence which it encounters from the keel upwards. But as a middle poſition may be taken between all theſe points, it will be ſufficient to conſider the angle formed by the ſides of the ſhip, and her axis, or the middle line of her length, at the ſurface of the water, in order to determine afterwards the mean point, and the mean angle of incidence.

It is evident that the angle 54° 44′ is too open, and very unfavourable to the ſhip's head-way, becauſe the water acts upon the rudder there with too great a ſine of incidence, as being equal to that of the angle which it makes with the line prolonged from the keel below: but above, the ſhock of the water is almoſt perpendicular to the rudder, becauſe of the breadth of the bottom, as we have already remarked. If then the rudder is only oppoſed to the fluid by making an angle of 45° with the line prolonged from the keel, the impreſſion, by becoming weaker, will be leſs oppoſed to the ſhip's head-way, and the direction NP of the abſolute effort of the water upon the helm drawing nearer to the lateral perpendicular, will be placed more advantageouſly, for the reaſons above mentioned. On the other hand, experience daily teſtifies, that a ſhip ſteers well when the rudder makes the angle DBE equal to 35° only.

It has been already remarked, that the effect of moving the wheel to govern the helm increaſes in proportion to the length of the ſpokes; and ſo great is the power of the wheel, that if the helmſman employs a force upon its ſpokes equivalent to 30 pounds, it will produce an effect of 90 or 120 pounds upon the tiller. On the contrary, the action of the water is collected into the middle of the breadth of the rudder, which is very narrow in compariſon with the length of the tiller; ſo the effort of the water is very little removed from the fulcrum B upon which it turns; whereas the tiller forms the arm of a lever 10 or 50 times longer, which alſo increaſes the power of the helmſman in the ſame proportion that the tiller bears to the lever upon which the impulſe of the water is directed. This force then is by conſequence 10 or 15 times ſtronger; and the effort of 20 pounds, which at firſt gave the helmſman a power equal to 90 or 120 pounds, becomes accumulated to one of 900 or 1800 pounds upon the rudder. This advantage then ariſes from the ſhortneſs of the lever upon which the action of the water is impreſſed, and the great comparative length of the tiller, or lever, by which the rudder is governed; together with the additional power of the wheel that directs the movements of the tiller, and ſtill farther accumulates the power of the helmſman over it. Such a demonſtration ought to remove the ſurpriſe with which the prodigious effect of the helm is ſometimes conſidered, from an inattention to its mechaniſm: for we need only to obſerve the preſſure of the water, which acts at a great diſtance from the centre of gravity G, about which the ſhip is ſuppoſed to turn, and we ſhall eaſily perceive the difference there is between the effort of the water againſt the helmſman, and the effect of the ſame impulſe againſt the veſſel. With regard to the perſon who ſteers, the water acts only with the arm of a very ſhort lever NB, of which B is the fulcrum; on the contrary, with regard to the ſhip, the force of the water is impreſſed in the direction NP, which paſſes to a great diſtance from G, and acts upon a very long lever EG, which renders the action of the rudder extremely powerful in turning the veſſel; ſo that, in a large ſhip, the rudder receives a ſhock from the water of 2700 or 2800 pounds, which is frequently the caſe when ſhe ſails at the rate of three or four leagues by the hour; and this force being applied in E, perhaps 100 or 110 feet diſtant from the centre of gravity G, will operate upon the ſhip, to turn her about, with 170,000 or 308,000 pounds; whilſt, in the latter caſe, the helmſman acts with an effort which exceeds not 30 pounds upon the ſpokes of the wheel.

After what has been ſaid of the helm, it is eaſy to judge, that the more a ſhip increaſes her velocity with regard to the ſea, the more powerful will be the effect of the rudder; becauſe it acts againſt the water with a force, which increaſes as the ſquare of the ſwiftneſs of the fluid, whether the ſhip advances or retreats; or, in other words, whether ſhe has head-way or ſtern-way; with this diſtinction, that in theſe two circumſtances the effects will be contrary. For if the veſſel retreats, or moves aſtern, the helm will be impreſſed from I to N; and inſtead of being puſhed according to NP, it will receive the effort of the water from N towards R; ſo that the ſtern will be tranſported to the ſame movement, and the head turned in a contrary direction.

When the helm operates by itſelf, the centre of rotation of the ſhip, and her movement, are determined by eſtimating the force of this machine; that is to ſay, by multiplying the ſurface of the rudder by the ſquare of the ſhip's velocity.

There are ſeveral terms in the ſea-language relating to the helm; as, *Bear up the helm*; that is, Let the ſhip go more large before the wind. *Helm a midſhip*, or *right the helm*: that is, Keep it even with the middle of the ſhip. *Port the helm.* Put it over to the left ſide of the ſhip. *Starboard the helm*, Put it on the right ſide of the ſhip.

HELMET an ancient defenſive armour worn by horſemen both in war and in tournaments. It covered both the head and face, only leaving an aperture in the front ſecured by bars, which was called the *viſor*

In atchievements, it is placed above the eſcutcheon for the principal ornament, and is the true mark of chivalry and nobility. Helmets vary according to the different degrees of thoſe who bear them. They are alſo uſed as a bearing in coats of arms. See HERALDRY.

HELMINTHOLITHUS, in natural hiſtory, a name given by Linnæus to petrified bodies reſembling worms.

Of theſe he reckons four genera. 1. Petrified lithophyta, found in the mountains of Sweden. 2. Petrified ſhells. 3. Petrified zoophytes. 4. Petrified reptiles.

HELMONT (John Baptiſt Van), a celebrated Flemiſh gentleman, was born at Bruſſels in 1577. He acquired ſuch ſkill in natural philoſophy, phyſic, and chemiſtry, that he was accounted a magician, and thrown into the inquiſition: but having with difficulty juſtified himſelf, as ſoon as he was releaſed he retired to Holland; where he died in 1644. He publiſhed, 1. *De magnetica corporum curatione.* 2. *Febrium doctrina inaudita.* 3. *Ortus medicinæ.* 5. *Paradoxa de aquis ſpadanis*; and other works, printed together in one volume folio.

HELMONT, a ſmall town in the Netherlands, in Dutch Brabant, and capital of the Diſtrict of Peeland, with a good caſtle. It is ſeated on the river Aa, in E long. 5. 37. N. Lat. 51. 31.

HELMSTADT, a town of Germany, in the duchy of Brunſwick, built by Charlemagne, in E. Long. 11. 10. N. Lat. 52. 20.

HELMSTADT, a ſtrong maritime town of Sweden, and capital of the province of Holland, ſeated near the Baltic Sea; in E. Long. 21. 5. N. Lat. 56. 44.

HELONIAS, in botany: A genus of the trigynia order, belonging to the hexandria claſs of plants; and in the natural method ranking under the 10th order, *Coronariæ.* The corolla is hexpetalous; there is no calyx; and the capſule is trilocular.

HELOISE, famous for her unfortunate affection for her tutor Abelard, and for her Latin letters to him after they had retired from the world. She died abbeſs of Paraclet in 1163. See ABELARD.

HELOS, (anc. geog.), a maritime town of Laconia, ſituated between Trinaſus and Acriæ, in Pauſanias's time in ruins. The diſtrict was called *Helote*, and the people *Helotes*, *Helotæ*, *Helei*, and *Heleatæ*, by Stephanus; and *Ilotæ*, by Livy. Being ſubdued by the Lacedæmonians, they were all reduced to a ſtate of public ſlavery, or made the ſlaves of the public, on theſe conditions, viz. that they neither could recover their liberty, nor be ſold out of the territory of Sparta. Hence the term ειλωτευειν, in Harpocration, for being in a ſtate of ſlavery; and hence alſo the Lacedemonians called the ſlaves of all nations whatever *helotes*. *Heloticus* is the epithet.

HELOTS, in Grecian antiquity, the ſlaves of the Spartans. See HELOS.—The freemen of Sparta were forbidden the exerciſe of any mean or mechanical employment, and therefore the whole care of ſupplying the city with neceſſaries developed upon the Helots.

HELSINBURG. See ELSINBURG.

HELSINGIA, a province of Sweden, bounded on the north by Jempterland and Medelpadia, on the eaſt by the Bothnic gulf, and on the ſouth and weſt by Dalecarlia and Geſtricia. It is full of mountains and foreſts, and the inhabitants are almoſt conſtantly employed in hunting and fiſhing. It has no cities: the principal towns are, Hudwickvald, Alta, and Dilſbo.

HELSINGIC CHARACTER, a peculiar kind of character found inſcribed on ſtones in the province of Helſingia. The Runic and Helſingic characters may be eaſily transformed into each other.

HELSTON, a town of Cornwall in England, ſeated on the river Cober, near its influx into the ſea. It is one of thoſe appointed for the coinage of tin and the place of aſſembly for the weſt diviſion of the ſhire. By a grant of Edward III. it has a market on Saturday, and fairs on March 13th, July 20th, September 9th, November 8th, the ſecond Saturday before St Thomas's day, and the Saturday before Midlent-Sunday, Palm-Sunday, and Whit-Monday. It had formerly a priory and a caſtle, and ſent members to parliament in the reign of Edward I. but was not incorporated till the 27th of queen Elizabeth, who appointed a mayor, to be choſen on September 29. and four aldermen, who are to be of the common-councilmen, and to chuſe 24 aſſiſtants; it was re-incorporated Auguſt 16. 1774. Here is a large market-houſe and a guild-hall, and four ſtreets that lie in the form of a croſs, with a little channel of water running through each. The ſteeple of the church, with its ſpire, is 90 feet high, and a ſea-mark. A little below the town there is a tolerable good harbour, where ſeveral of the tin-ſhips take in their lading. King John exempted this place from paying toll any where but in the city of London; and from being impleaded any where but in their own borough. It contains about 400 houſes, is well inhabited, and ſends two members to parliament.

HELVELIA, in botany; a genus of the natural order of fungi, belonging to the cryptogamia claſs of plants. The fungus is of the ſhape of a top.

HELVETIC, ſomething that has a relation to the Switzers, or inhabitants of the Swiſs cantons, who were anciently called *Helvetii*,—The Helvetic body comprehends the republic of Switzerland, conſiſting of 13 cantons, which make ſo many particular commonwealths. By the laws and cuſtoms of the Helvetic body, all differences between the ſeveral ſtates and republics are to be decided within themſelves, without the intervention of any foreign power. The government of this body is chiefly democratic, with ſome mixture of the ariſtocratic.

HELVETII, a people of Belgica, in the neighbourhood of the Allobroges and the Provincia Romana; famed for bravery and a turn for war. Called *Civitas Helvetia,* and divided into four Pagi or Cantons: ſituated to the ſouth and weſt of the Rhine, by which they were divided from the Germans; and extending towards Gaul, from which they were ſeparated by mount Jura on the weſt, and by the Rhodanus and Lacus Lemanus on the ſouth, and therefore called a Gallic nation (Tacitus, Cæſar, Strabo, Ptolemy, Pliny.) Formerly a part of Celtic Gaul, but by Auguſtus aſſigned to Belgica.

HELVETIUS (Adrian), an eminent phyſician, born in Holland. After having ſtudied phyſic at Leyden, he went to Paris, where he acquired great reputation in his profeſſion. He introduced in France the uſe of Ipecacuanha in the cure of dyſenteries; a remedy which he at firſt kept ſecret, but was ordered to make it public, and on that account received a gratification from the king of 1000 louis d'ors. He was made inſpector-general of the hoſpitals in Flanders, phyſician to the duke of Orleans, regent of France, &c.; and died at Paris, 1727, aged 65. He wrote a treatiſe on the moſt common diſeaſes, and the remedies proper for their cure (the beſt edition of which is that of 1724, in two volumes octavo); and other works.

HELVETIUS (John Claude), ſon of the above, was born in 1685, and died in 1715. He was firſt phyſician to the queen, and greatly encouraged by the town as well as court. He was, like his father, inſpector-general of the military hoſpitals. He was of the Academy of Sciences at Paris, of the Royal Society in London, and of the Academies of Pruſſia, Florence, and Bologne. He is the author of 1. *Idée Générale de l'économie animale,* 1722, 8vo. 2. *Principia Phyſico-Medica, in tyronum Medicinæ gratiam conſcripta,* 2 vols. 8vo.

We may juſt mention alſo, that he is the father of the Monſ. HELVETIUS, who wrote the celebrated book *De l'Eſprit;* and whom Voltaire calls "a true philoſopher;" but whoſe book was ſtigmatized by the authors of the *Journal de Trevoux,* and ſuppreſſed by the government.

HELVICUS (Chriſtopher), profeſſor of divinity, Greek, and the Oriental tongues, in the univerſity of Giſſen, died in the flower of his age in 1617; after having publiſhed ſeveral books, and projected more. The Hebrew language was ſo familiar to him, that he ſpoke it as fluently as his mother tongue. He was not only a good grammarian, but alſo an able chronologer. His chronological tables have been greatly eſteemed, though they are not free from errors.

HELVIDIANS, a ſect of ancient heretics, denominated from their leader Helvidius, a diſciple of Auxentius the Arian, whoſe diſtinguiſhing principle was, that Mary, the mother of Jeſus, did not coutinue a virgin, but had other children by Joſeph.

HELVOET-SLUYS, a ſea-port town of the United Netherlands, ſeated on the iſland of Voorn, in the province of Holland, and where the Engliſh packet-boat always goes. It is but a ſmall place, conſiſting only of a handſome quay, and two or three little ſtreets. But it is very well fortified, and eſteemed the ſafeſt harbour in the country. The largeſt men of war may come up to the middle of the town; and yet it has but very little trade, becauſe the merchants chooſe to live higher up the country. E. Long. 4. 0. N. Lat. 51. 44.

HEMATH, or HAMATH, (anc. geog.), the name of a city (whoſe king was David's friend, 2 Sam. ix.) to the ſouth of Lebanon; from which a territory was called *Nemath,* on the north of Canaan and ſouth of Syria, as appears by the ſpies, Numb. xiii. 1 Kings vii. Ezek. xlvii. Whether one or more cities and diſtricts of this name lay in this tract, neither intepreters nor geographers are agreed. The eaſtern part was called *Hemath-zoba,* 2 Chron. viii. unleſs we ſuppoſe that there was a city in *Zoba* of this name fortified by Solomon. In defining the boundary of Paleſtine, it is often ſaid, *from the entering of Hamath;* as a province to be entered into through a ſtrait or defile. And if there was ſuch, the next queſtion is, From what metropolis it was called *Hemath?* Antioch, capital of Syria, is ſuppoſed to be called *Hemath* or *Amatha,* (Jonathan, Targum, &c.); and again, *Epiphania,* (Joſephus.) Both were to the north of Lebanon; conſequently not the *Hemath* of Scripture, the immediate boundary of Paleſtine to the north, and lying to the ſouth of Lebanon.

HEMATITES. See HÆMATITES.

HEMELAR (John), an eminent antiquarian, and canon of Antwerp, in the 17th century, was born at the Hague; and wrote a work, entitled *Expoſitio Numiſmatum imperatorum Romanorum á Julio Cæſare ad Heraclium;* which is very ſcarce, though it has had ſeveral editions.

HEMEROBAPTISTS, a ſect among the ancient Jews, thus called from their waſhing and bathing every day, in all ſeaſons; and performing this cuſtom with the greateſt ſolemnity, as a religious rite neceſſary to ſalvation.

Epiphanius, who mentions this as the fourth hereſy among the Jews, obſerves, that in other points theſe heretics had much the ſame opinions as the Scribes and Phariſees: only that they denied the reſurrection of the dead, in common with the Sadducees, and retained a few other of the improprieties of theſe laſt.

The ſects who paſs in the Eaſt under the denomination of Sabians, calling themſelves *Mendai Iiahi,* or *the diſciples of John,* and whom the Europeans entitle *the Chriſtians of St John,* becauſe they yet retain ſome knowledge of the goſpel, are probably of Jewiſh origin, and ſeem to have been derived from the ancient Hemerobaptiſts; at leaſt it is certain, that that John, whom they conſider as the founder of their ſect, bears no ſort of ſimilitude to John the Baptiſt, but rather reſembles the perſon of that name whom the ancient writers repreſent as the chief of the Jewiſh Hemerobaptiſts. Theſe ambiguous Chriſtians dwell in Perſia and Arabia, and principally at Baſſora; and their religion conſiſts in bodily waſhings, performed frequently, and with great ſolemnity, and attended with certain ceremonies which the prieſts mingle with this ſuperſtitious ſervice.

HEMEROBIUS, in zoology: A genus of inſects of the neuroptera order; the characters of which are theſe. The mouth is furniſhed with two teeth; the palpi are four ; the wings are deflected, but not plaited ; and the antennæ are briſtly, and longer than the breaſt. There are 15 ſpecies, principally diſtinguiſhed by their colours.—This inſect takes the name of *hemerobius* from the ſhortneſs of its life, which, however, continues ſeveral days. In the ſtate of larva it is a great devourer of plant-lice, for which it has had beſtowed upon it the appellation of *lion of the plant-lice*. The hemerobii, even after their transformation, preſerve their carniverous inclination. Not ſatisfied with making war upon the plant-lice, who tamely let themſelves be devoured, they do not ſpare each other. The eggs of this inſect are born upon ſmall pedicles, which are nothing but a gum ſpun out by the hemerobius by raiſing up the hinder part of its abdomen, and by that means the egg remains faſtened to the upper part of the thread. Thoſe eggs are depoſited upon leaves, and ſet in the form of bunches. They have been taken for paraſitic plants. The larva, when hatched, finds there its food in the midſt of the plant lice. In 15 or 16 days it has attained to its full growth. With its ſpinning wheel at its tail, it makes itſelf a ſmall, round, white, ſilky cod, of a cloſe texture. In ſummer, at the end of three weeks, the hemerobius iſſues forth with its wings ; but when the cod has not been ſpun till autumn, the chryſalis remains in it the whole winter, and does not undergo its final metamorphoſis till the enſuing ſpring. The flight of this inſect is heavy : ſome ſpecies have an excrementitious ſmell. One goes by the name of the *water-hemerobius*, becauſe it lives moſtly at the water-ſide.

Plate CCXXXIV.

Barbut's Inſects.

HEMEROCALLIS, DAY-LILY, or *lily aſphodel:* A genus of the monogynia order, belonging to the hexandria claſs of plants ; and in the natural method ranking under the 10th order, *Coronariæ*. The corolla is campanulated, with the tube cylindrical ; the ſtamina declining downwards.

Species. 1. The flava, or yellow day-lily, hath ſtrong fibrous roots, ſending up large hollow keel-ſhaped leaves, two feet long, upright, leafleſs firm ſtalks, two feet high ; dividing at top into ſeveral footſtalks, each terminated by one large lilaceous yellow flower of an agreeable odour. Of this there is a variety called the *hemerocallis minor*, or ſmall yellow day-lily. 2. The fulva, reddiſh, or copper-coloured day-lily, hath roots compoſed of ſtrong fleſhy fibres and large oblong tubes ; radical, keel-ſhaped, hollow, pointed leaves, a yard long, reflected at top ; with leafleſs ſtalks three or four feet high, and large copper coloured lilaceous flowers. Theſe have large ſtamina, charged with a kind of brown-coloured farina ; which on being touched or ſmelled to, is diſcharged in great plenty all over the hands and face.

Culture. Both theſe ſpecies are hardy, and will thrive any where. They may be eaſily progagated by parting their roots in autumn, or almoſt any time after flowering, or before they begin to flower.

HEMERODROMI, (compounded of ημερα "day," and δρομος "courſe," &c.) among the ancients, were centinels or guards, appointed for the ſecurity and preſervation of cities and other places. They went out of the city every morning as ſoon as the gates were opened, and kept all day patrolling round the place ; ſometimes alſo making excurſions farther into the country, to ſee that there were no enemies lying in wait to ſurpriſe them.

HEMERODROMI were alſo a ſort of couriers among the ancients, who only travelled one day, and then delivered their packets or diſpatches to a freſh man, who run his day, and ſo on to the end of the journey. The Greeks had theſe ſort of couriers, which they derived from the Perſians, who were the inventors thereof, as appears from Herodotus. Auguſtus had the ſame; at leaſt he eſtabliſhed couriers, who, if they did not relieve each other from day to day, yet did it from ſpace to ſpace, and that ſpace was not very great.

HEMEROTROPHIS, in antiquity, a meaſure of capacity, the ſame with the chœnix. It was ſo called from its holding one day's food. The word is compounded of ημερα *a day*, and τροφη *food*.

HEMI, a word uſed in the compoſition of divers terms. It ſignifies the ſame with *ſemi* or *demi*, viz. "half;" being an abbreviature of ημισυς *hemiſys*, which ſignifies "the ſame." The Greeks retrenched the laſt ſyllable of the word ημισυς in the compoſition of words ; and after their example, we have done ſo too in moſt of the compounds borrowed from them.

HEMICRANIA, in medicine, a ſpecies of cephalalgia, or head-ach ; wherein only one ſide of the head is affected ; and owing to a congeſtion of blood in the veſſels of that half.

HEMICYCLE, HEMICYCLUM, compounded of ημισυς *half*, and κυκλος *circle*, a ſemicircle.

HEMICYCLE is particularly applied in architecture, to vaults in the cradle form ; and arches or ſweeps of vaults, conſtituting a perfect ſemicircle. To conſtruct an arch of hewn ſtone, they divide the hemicycle into ſo many vouſſoirs ; taking care to make them an uneven number, that there be no joint in the middle, where the key ſtone ſhould be. See KEY and BRIDGE.

HEMICYCLIUM was alſo a part of the orcheſtra in the ancient theatre. Scaliger, however, obſerves, it was no ſtanding part of the orcheſtra ; being only uſed in dramatic pieces, where ſome perſons were ſuppoſed to be arrived from ſea, as in Plautus's Rudens.

The ancients had alſo a ſort of ſun-dial, called *hemicyclium*. It was a concave ſemicircle, the upper end or cuſp whereof looked to the north. There was a ſtyle, or gnomon, iſſuing from the middle of the hemicycle, whereof that point correſponding to the centre of the hemicycle repreſented the centre of the earth ; and its ſhadow projected on the concavity of the hemicycle, which repreſented the ſpace between one tropic and another, the ſun's declination, the day of the month, hour of the day, &c.

HEMIMERIS, in botany ; a genus of the angioſpermia order, belonging to the didynamia claſs of plants. The capſule is bilocular, with one of the cells more gibbous than the other ; the corolla is wheel-ſhaped ; with one diviſion greater, and inverſe heart-ſhaped ; the interſtice of the diviſions nectar-bearing.

HEMINA, in Roman antiquity, a liquid meaſure, which, according to Arbuthnot, was equal to half a wine pint Engliſh meaſure ; its contents being 2.818 ſolid inches.

HEMIOBOLON, a weight often mentioned by the ancient writers in medicine, and expreſſing the half of their obolus, or the twelfth part of a dram, that is, five grains.

HEMIONITIS, in botany: A genus of the natural order of filices, belonging to the cryptogamia claſs of plants. The fructifications are in lines decuſſating or croſſing each other.

HEMIPLEGIA, or HEMIPLEXIA, among phyſicians, a palſy of one half of the body. See (the *Index* ſubjoined to) MEDICINE.

HEMIPTERA, derived from ημισυς *half*, and πτερον *wing*, in the Linnæan ſyſtem, the ſecond order of inſects, comprehending twelve genera, viz. the *blatta*, *mantis*, *gryllus*, *fulgora*, *cicada*, *notonecta*, *nepa*, *cimex*, *aphis*, *chermes*, *coccus*, and *thrips*, and a great number of ſpecies. See ENTOMOLOGY, INSECTS, and ZOOLOGY.

HEMISPHERE, (HEMISPHÆRIUM, compounded of ημισυς *half*, and σφαιρα *ſphere*,) in geometry, is one half of a globe or ſphere, when divided into two by a plane paſſing through its centre.

HEMISPHERE, in aſtronomy, is particularly uſed for one half of the mundane ſphere.

The equator divides the ſphere into two equal parts, called the *northern* and *ſouthern hemiſpheres*. The horizon alſo divides the ſphere into two parts, called the *upper* and the *lower hemiſpheres*.

HEMISPHERE is alſo uſed for a map, or projection, of half the terreſtrial globe, or half the celeſtial ſphere, on a plane. Hemiſpheres are frequently called *planiſpheres*.

HEMISTICH, in poetry, denotes half a verſe, or a verſe not completed.

Of this there are frequent examples in Virgil's Æneid; but whether they were left unfiniſhed by deſign or not, is diſputed among the learned: Such are, *Ferro accincta vocat*, Æn. II. v. 614. And, *Italiam non ſponte ſequor*, Æn. IV. v. 361.

In reading common Engliſh verſes, a ſhort pauſe is required at the end of each hemiſtich or half verſe.

HEMITONE, in the ancient muſic, was what we now call a half note or ſemitone.

HEMITRITÆUS, in medicine, a kind of fever, denoting the ſame as ſemi-tertian, returning twice every day. The word is Greek, and compounded of ημισυς "half," and τριταιος "third or tertian."

HEMLOCK, in botany. See CICUTA and CONIUM.

HEMOIPTOTON. See ORATORY, nº 77.

HEMP. See CANNABIS.—It does not appear that the ancients were acquainted with the uſe of hemp, in reſpect of the thread it affords. Pliny, who ſpeaks of the plant in his natural hiſtory, lib. xx. cap. 23. ſays not a word of this; contenting himſelf with extolling the virtues of its ſtem, leaves, and root. In effect, what ſome writers of the Roman antiquities remark, viz. that the hemp neceſſary for the uſe of war was all ſtored up in two cities of the weſtern empire, viz. at Ravenna and Vienne, under the direction of two procurators, called *procuratores linificii*, muſt be underſtood of linum or flax.

Annals of Agriculture. vol. xiii. p. 508.

The uſe of hemp is ſo extenſive and important, that vaſt quantities of it are annually imported into ſeveral kingdoms from thoſe countries where it grows in greateſt plenty, of which Ruſſia is one. In the year 1763, the quantity imported into England alone amounted to 11,000 tons. Sir John Sinclair informs us, that in the year 1785, the quantity exported from Peterſburg in Britiſh ſhips was as follows.

	Poods.
Clean hemp - -	1,038,791
Outſhot - - -	37,382
Half-clean - - -	18,374
Hemp-codille - - -	19,251
	1,113,798

Now, allowing 63 poods to a ton, the quantity juſt mentioned will amount to 17,695 tons; and ſuppoſing it to take five acres to produce a ton of hemp, the whole quantity of ground requiſite for this purpoſe would amount to 88,475 acres.

Annals of Agriculture.

By other accounts, the annual exports of hemp to England is valued at 400,000l; but by a computation of the whole imported into Britain and Ireland in 1788, it would ſeem that a conſiderably greater quantity muſt fall to the ſhare of England. In that year the quantity amounted to no leſs than 58,364 tons: which at 20l. per ton amounted to 1,269,280l. We cannot wonder at this vaſt conſumpt, when it is conſidered that the ſails and cordage of a firſt rate man of war require 180,000lb. of rough hemp for their conſtruction; but even this will ſcarce account for the enormous conſumpt in France, which in the year 1783 is ſaid to have amounted to upwards of 400 millions of pounds, or 200,000 tons; of which more than one third was imported.

Only the coarſer kinds of hemp are employed in making cordage, the better ſorts being uſed for linen, which though it can never be made ſo fine as that from flax, is yet incomparably ſtronger, and equally ſuſceptible of bleaching both in the old and new way. Cloths made of hemp have alſo this property, that their colour improves by wearing, while that of linen decays. The prices of hemp linen are various; from 10d. to 4s 6d. per yard. The low-priced kinds are very generally worn in Suffolk (where hemp is cultivated) by huſbandmen, ſervants, &c. thoſe from 1s. 6d. to 2s. by farmers and tradeſmen; and thoſe from 2s. 6d. to 4s. 6d. are frequently preferred by gentlemen to flax-linen, on account of their ſtrength and warmth. The Engliſh hemp is much ſuperior in ſtrength to that which grows in any other country. Next to it is the Ruſſian, from which ſacking is uſually made, as it is ſometimes alſo from the offal of the Engliſh kind, but none of the Suffolk hemp is ever made into cordage, on account of its fineneſs. A conſiderable quantity of Ruſſia ſheeting is imported into England merely on account of its ſtrength, and is much coarſer at the price than any other foreign linen.

Beſides theſe uſes of hemp, it is ſaid to poſſeſs a property as a plant which renders it almoſt invaluable; *viz.* that of driving away almoſt all inſects that feed upon other vegetables. Hence in ſome places of the continent they ſecure their crops from theſe miſchievous attacks, by ſowing a belt of hemp round their gardens, or any particular ſpot which they wiſh to preſerve.

The important uſes of hemp, and the ſuperiority of that produced in Britain to other kinds, have rendered the culture of it an object of attention to government. Accordingly in the year 1787, a bounty of threepence per ſtone was allowed on all the hemp raiſed in England; and probably with a view to encourage the growth of Engliſh hemp, duties have been laid on that which comes from abroad. Dreſſed hemp in a Britiſh ſhip pays 2l. 4s. per cwt. import duty; in a foreign one 2l. 6s. 9d.; and in both caſes a drawback of 1l. 19s. is allowed. Undreſſed hemp in a Britiſh ſhip pays 3s. 8d.; and in a foreign one 3s. 11d. In both caſes the drawback is 3s. 4d. The export of Britiſh hemp is free.

The uſual height of the plant when growing is from five to ſix feet, but this varies very conſiderably according to circumſtances. That which is cultivated near Biſchwiller in Alſace is ſometimes more than 12 feet high, and upwards of three inches in circumference, the ſtalks being ſo deeply rooted that a very ſtrong man can ſcarce pull them up. Mr. Arthur Young, in a tour through Catalonia in Spain, ſays, that where the country is well watered, the crops of hemp are extraordinary; and that the plants generally riſe to the height of ſeven feet. In Italy hemp is generally cultivated, though the Bologneſe only can pretend to any ſuperiority in the management of it. It is there ſown upon their beſt lands, which are rich ſtrong loams; and on which they are at all poſſible pains to procure a fine friable ſurface. For manure they uſe dung, pieces of rotten cloth, feathers, and horns brought from Dalmatia. The plant, however, may be cultivated upon ground of every kind; the poorer land producing that which is finer in quality though in ſmaller quantity; whereas ſtrong and rich land produces a great quantity, but coarſer. It does not exhauſt the land on which it grows like flax, whence it is probable, that if properly managed, and care taken in the cultivation, it might be found to ſuperſede flax entirely. A Suſſex manufacturer, who writes on this ſubject in the Annals of Agriculture, informs us, that it may be raiſed for many years ſucceſſively on the ſame ground, provided it be well manured. An acre requires from nine to twelve pecks, according to the nature of the ſoil; the latter being the moſt uſual, though a variation in the quality of the ſoil makes an alteration both in the quantity and quality of the hemp. An acre produces on an average 36 or 38 ſtone. The abbé Brulle, in a treatiſe upon the Culture and Management of Hemp, printed by order of the lords and committee of council for trade and foreign plantations, informs us, that the ſeaſon for ſowing it extends from the 25th of March to the 15th of June. The ſeed ought always to be ſown thin, not exceeding two buſhels to an acre; and if you have the advantage of a drill plough, ſtill leſs will anſwer. As there are two kinds of hemp, the male and female, of which the former only produces ſeed, ſome regard muſt be had to this circumſtance. In Suſſex the male and female are pulled together about 13 weeks after the ſowing, but in the fens they are frequently ſeparated. This laſt method is recommended by the abbe Brulle, who, for the more eaſy accompliſhment of it, directs that little paths ſhould be made lengthwiſe through the field at about ſeven feet diſtance from each other, to allow a paſſage for the perſon who pulls up the female hemp from among the other; the latter requiring to ſtand more than a month after for the purpoſe of ripening the ſeeds. The female hemp is known to be ripe by the fading of the flowers, the falling of the farina fecundans, and ſome of the ſtalks turning yellow. After the whole of this kind is pulled, it muſt be manufactured according to the directions to be afterwards given, and ought to be worked if poſſible while green; the hemp thus produced being much finer than that which is previouſly dried. The reaſon of this is, that the plant contains a great quantity of glutinous matter; which being once dried, agglutinates the fibres in ſuch a manner that they can never be afterwards perfectly ſeparated. The female hemp, however, is always in ſmaller quantity than the male; and therefore where the crop is large it will be impoſſible to work the whole as faſt as it is pulled or cut. It is known to be ripe by the ſtems becoming pale; but it muſt be remembered, that hemp of any kind will be much leſs injured by pulling the plants before they are ripe than by letting them ſtand too long.

The male hemp being ſtripped of its leaves, &c. as afterwards directed, will ſoon be dry for ſtoring by the heat of the atmoſphere, though ſometimes it may be neceſſary to uſe artificial means; but where theſe are uſed, the utmoſt care muſt be taken, hemp when dry being exceedingly inflammable. The ſtored or dried hemp muſt be ſteeped and treated in every other reſpect as though it had been green; whence it is evident that this operation ought never to be uſed but in caſes of neceſſity It is likewiſe impoſſible to make hemp which has been dried previous to its being ſteeped ſo white as that which has been worked green.

Mill's Huſbandry, vol. v.

With regard to the perfection of hemp-ſeed for a ſubſequent ſeaſon, it would ſeem proper to ſet apart a piece of ground for this purpoſe; for M. Aimen, from 40 plants raiſed in the common way, had only a pound and a half of ſeed, though the plants from which it was taken might be deemed fine; whereas, from a ſingle plant which grew by itſelf, he had ſeven pounds and an half. Some are of opinion, that by putting the cluſters which contain the hemp-ſeed to heat and ſweat, the quality is improved; as many of thoſe ſeeds which would otherwiſe wither and die, may thus arrive at perfection. This, however, ſeems to be very problematical; as there are no experiments which ſhow that ſeeds, when ſeparated from the vegetable producing them have any power of meliorating themſelves.

After the hemp is pulled, it muſt be taken in large handfuls, cutting off the roots (though this is not abſolutely neceſſary), the leaves, ſeeds, and lateral branches, being dreſſed off with a wooden ſword or ripple. It is then to be made up into bundles of twelve handfuls each, in order to be ſteeped, like flax, in water. This, or ſomething ſimilar, is abſolutely neceſſary, in order to ſeparate the bark, which is properly the hemp, from the reed or woody part. In Suffolk, this operation is called *water retting*; but ſometimes a mere expoſure to the air is ſubſtituted in its place, turning the hemp frequently during the time it is expoſed. This is called *dew-retting*; but the former method is univerſally deemed preferable. Such hemp as is deſigned for ſeed is ſeldom water-retted, though in the opinion of the manufacturer already quoted, it would be better if it were ſo. Dew-retted hemp is generally ſtacked and covered during the winter; in January and February it is ſpread upon meadow land, and whitens with the froſt and ſnow; though it is always much inferior to the other; and proper for coarſer yarns only.

The length of time required for ſteeping hemp is various, and a complete knowledge of it can only be attained by practice. In Suffolk it is uſual to continue the immerſion four, five, or ſix days; ſtanding water is preferred, and the ſame water will ſteep hemp three times during the ſeaſon, but the firſt has always the beſt colour. The abbé Brulle prefers clear and running water, eſpecially if overhung with trees. The bundles are to be laid croſſwiſe upon each other; taking particular notice of the manner in which they lie when put in, that they may be taken out without difficulty. His time of ſteeping is from ſix to 11 days; and here we muſt obſerve, that it is much better to let it remain too long in the water than too ſhort a time. The ſlendereſt hemp requires the moſt ſoaking. The operation is known to be finiſhed by the reed ſeparating eaſily from the bark.

After the hemp is thoroughly ſteeped, the next operation is to ſeparate the bark from the reed or woody part; and this may be done in two ways, viz. either pulling out the reed from every ſtalk with the hand, or drying and breaking it like flax. The abbe Brulle is very particular in his directions for this laſt operation, which he calls *reeding*, and which may be performed either in a trough under water or upon a table. The whole, however, may be reduced to the following, viz. preſſing down the bundles either in the trough or on a table by proper weights, to keep the hemp ſteady on the middle and top end. Then beginning at the upper part of the bundle, pull out the reeds one by one. As you proceed, the rind which remains will preſs cloſely upon the remaining unreeded hemp, and keep it more ſteady; ſo that you may take two, four, or even ſix ſtalks, at a time. The weight is then to be removed from the top, and all the pieces of reed which remain there having broken off in the former operation, are to be taken out. Laſtly, the middle weight is to be taken off, and any ſmall pieces which remain there taken out. If the reeding is performed on a table, the bundle muſt be weeded frequently, though ſlightly; a continual dropping of water would perhaps be the beſt method.

After the hemp is reeded, it muſt next be freed from the mucilaginous matter with which it ſtill abounds. This is done by pouring water through it, ſqueezing out the liquid after every affuſion, but taking care not to let the threads twiſt or entangle each other, which they will be very apt to do. The abbe is of opinion, that ſoft ſoap ſhould be diſſolved in the laſt water, in the proportion of an ounce to three pounds of dry hemp; which though not abſolutely neceſſary, contributes much to the ſoftening and rendering the hemp eaſy and pleaſant to dreſs.

Hemp is broken by machinery, after being ſteeped, in a manner ſimilar to flax; but the inſtruments uſed for this purpoſe in Suffolk are all worked by the hand. That which breaks in the operation is called *ſhorts*, and is about half the value of the long hemp. The beſt water-retted hemp ſells for about 8 s. 6 d. per ſtone; the other kind from one to two ſhillings lower.

Beating of hemp is the next operation, which formerly was performed entirely by hand, but now in moſt places by a water-mill, which raiſes three heavy beaters that fall upon it alternately; the hemp being turned all the while by a boy in order to receive the ſtrokes equally. The finer it is required to make the tow, the more beating is neceſſary. It is then dreſſed or combed by drawing it through heckles formed like the combs of wool-manufacturers, only fixed. Sometimes it is divided into two or three ſorts of tow, and ſometimes the whole is worked together into one ſort; the prices varying from 6 d. to 1 s. 6 d. per pound.

The hemp thus manufactured is ſold to ſpinners, who reel their yarn as follows.

2 Yards make	1 thread.
40 Threads	1 lea.
20 Leas	1 ſkain.
3 Skains	1 clue of 4,800 yards.

It is next delivered to the bleachers, who return it bleached on receiving 20 or 21 clues for every 120 bleached. The prices of the hemp-yarn are as follow:

1 Clue from a pound	7d. or 6½d.
1½ from do.	8½d. or 8d.
2 from do.	9½d. or 9d.
2½ from do.	10½d. or 10d.
3 from do.	12d.

Chineſe Hemp, a newly diſcovered ſpecies of cannabis, of which an account is given in the 72d volume of the Philoſophical Tranſactions, p. 46. In that paper Mr Fitz-Gerald, vice-preſident of the ſociety for encouraging arts, mentions his having received the ſeeds from the late Mr Elliot: which being ſown, according to his directions, produced plants 14 feet high, and nearly ſeven inches in circumference. Theſe being pulled up in November, and ſteeped for a fortnight in water, were placed againſt a ſouthern wall to dry. After this the hemp was found to ſeparate eaſily from the woody part; and ſo great was the produce, that 32 plants yielded three pounds and a quarter. In conſequence of this ſucceſs, Mr Fitzgerald applied to the directors of the India company to procure ſome of the ſeeds from China; which being complied with, the ſociety were furniſhed, in 1785, with ſome more of the ſeeds, which were diſtributed to ſeveral of the members; but, notwithſtanding their endeavours, few of the plants appear to have ripened their ſeeds in that country. Two of the ſpecies of hemp, tried by the duke of Northumberland, roſe to the height of 14 feet ſeven inches, and would have been much larger, had they not been hurt by an high wind: another kind aroſe only to that of three feet and an half, the ſtem about the ſize of a common wheat ſtraw; but though it flowered well, did not produce any ſeed. Theſe kinds were ſown in a hot-bed where the heat was very ſtrong, on the 14th of April. They appeared above ground in four days, and were tranſplanted into pots on the 25th. They were then put under an hot-bed frame where the heat had been gone off, to harden them for the natural ground, in which they were planted on the 30th, by turning them whole out of the pots; letting them, three together, be planted at two feet diſtance every way; covering them at times for about ten days, until they were ſuppoſed to be rooted. Only a few ſeeds were preſerved from plants which had been kept conſtantly in a ſtove.

Other trials were attended with little better ſucceſs; but, in 1786, the Rev. Dr Hinton of Northwold near Brandon, made a ſucceſsful experiment with ſome ſeeds he received from the ſecretary of the ſociety. They were ſown on the 17th of May, and appeared on the 6th of June. The plants were few and ſickly; and notwithſtanding ſome fine ſhowers, they continued to languiſh ſo much that the experiment was entirely abandoned, and buckwheat was harrowed into the ground for a fallow crop. In the beginning of October, however, the perſons employed in cutting the buckwheat diſcovered ſome ſeed in the heads of a few ſtraggling hemp plants which had been ſuffered to grow in the crop; which being carefully threſhed, afforded three pints of ſeed tolerably bright and heavy. Theſe ſeeds were ſown on the 10th of May 1787. On the 19th they appeared above the ground numerous and healthy. The male hemp was drawn on the 13th of Auguſt, but the female not till the 9th of October; the ſpot on which the plants were ſown meaſured only 322 ſquare yards, and produced of marketable hemp no leſs than 95 ſtone 7 pounds 12 ounces; being upwards of one-third more than the beſt crops of Engliſh hemp are ever known to produce. Thus it appeared, that the ſeeds of the Chineſe hemp had retained their ſuperiority over thoſe of the Engliſh; though how long they would continue to do ſo cannot be determined but by experience. For this experiment Dr Hinton received a ſilver medal from the ſociety. Few of the ſeeds either of Chineſe, or any other hemp, will vegetate if two years old at the time of ſowing; and to this circumſtance the Doctor attributes the failure of other trials of Chineſe hemp.

Hemp-Agrimony, a ſpecies of eupatorium. See EUPATORIUM.

HEMPSTEAD, a town of Hartfordſhire in England, ſtands among hills, upon a ſmall river called the Gade, and is ſeven miles to the weſt of St Alban's, five miles ſouth-eaſt of Berkhamſted, and 20 north-weſt of London. The church has a handſome tower with a tall ſpire, and a good ring of bells. It was, in the time of the Saxons, called by the name of Henamſted, or Hean-Hemſted, i. e. High-Hemſtead. In William the Conqueror's time, by the name of Hemelamſtede. Henry VIII. incorporated this village by the name of a bailiff; and he empowered the inhabitants to have a common ſeal, and a pye-powder court during its markets and fairs. It has been reckoned one of the greateſt markets for wheat in this county, if not in England, 20,000l. a week being often returned in it only for meal. Eleven pair of mills ſtand within four miles of the place, which bring a great trade to it; but the road is thereby ſo continually torn, that it is one of the worſt turnpike ways to London.

HEMSKERCK (Egbert), called the *Old*, a celebrated Flemiſh painter of drolls and converſations, of whom, though ſo univerſally known, we have no information as to the time in which he flouriſhed, or the ſchool in which he was taught. Though the taſte of his compoſitions is but low, yet it ought to be conſidered that he took his ſubjects from nature; from perſons in the meaneſt occupations, whoſe dreſs, actions, and manners, could not furniſh the imagination with any ideas of elegance: and to expreſs their paſſions and undiſguiſed humours, ſeems to have been the utmoſt of his ambition. By frequenting fairs, merry-meetings, gaming-houſes, and inns, he acquired a ſurpriſing power of connecting humorous circumſtances. He deſigned and drew correctly, and his pictures have a ſtrong effect from his accurate management of the chiaro obſcuro. Some of his pictures have ſuffered from unſkilful cleaners, and many things are ſold as his which diſhonour him; but his genuine works, well preſerved, have a clearneſs and force equal to any of the Flemiſh artiſts.

HEMSKERCK (Egbert), called the *Young*, was the diſciple of Peter Grebber, but imitated the manner of Brouwer and of the elder Hemſkerck. He was born at Haerlem in 1645, but ſettled at London, where for a long time his works were exceedingly eſteemed, though they are now much ſunk in their value. He had a whimſical imagination, and delighted in compoſing uncommon and fanciful ſubjects; ſuch as the temptation of St Anthony, nocturnal intercourſes of witches and ſpectres, enchantments, &c. which he executed with a free pencil and a ſpirited touch. It was cuſtomary with him to introduce his own portrait among the converſations he deſigned; and for that purpoſe had a ſmall looking-glaſs placed near his caſe. He died in 1704.

HEN, in ornithology. See PHASIANUS.

Guinea-Hen. See NUMIDA.

Hen-Bane. See HYOSCIAMUS.

Hen-Harrier. See FALCO.

Hen-Mould-ſoil, in agriculture, a term uſed by the huſbandmen in Northamptonſhire, in England, and other counties, to expreſs a black, hollow, ſpongy, and mouldering earth, uſually found at the bottom of hills. It is an earth much fitter for grazing than for corn, becauſe it will never ſettle cloſe enough to the grain to keep it ſufficiently ſteady while it is growing up, without which the farmers obſerve, it either does not grow well; or, if it ſeems to thrive, as it will in ſome years, the growth is rank, and yields much ſtraw, but little ear. It is too moiſt, and to that is principally to be attributed this rankneſs of the crop in ſome years; and the occaſion of its retaining ſo much moiſture is, that it uſually has a bed of ſtiff clay, which will not let the water run off into the under ſtrata.

In ſome places they alſo give this name to a black, rich, and denſe earth, with ſtreaks of a whitiſh mould in many parts. This ſort of hen-mould is uſually found very rich and fertile.

HENAULT (Charles John Francis), was ſon of John Remi Henault lord of Mouſſy, and born at Paris in 1685. He early diſcovered a ſprightly benevolent diſpoſition, and his penetration and aptneſs ſoon diſtinguiſhed itſelf by the ſucceſs of his ſtudies. Claude de Liſle, father of the celebrated geographer, gave him the ſame leſſons in geography and hiſtory which he had before given to the duke of Orleans afterwards regent; and which have been printed in ſeven volumes, under the title of "Abridgment of Univerſal Hiſtory." On quitting college, Henault entered the Oratory, where he ſoon attached himſelf to the ſtudy of eloquence: and, on the death of the abbe Rene, reformer of La Trappe, he undertook to pronounce his panegyric; which not meeting the approbation of father Maſſilon, he quitted the Oratory after two years, and his father bought for him, of Mareſchal Villeroi, the "lieutenancedes chaſſes," and the government of Corbeil. At the marſhal's he formed connections, and even intimate friendſhips, with many of the nobility, and

Henault. and paſſed the early part of his life in agreeable amuſements, and in the livelieſt company, without having his religious ſentiments tainted. He aſſociated with the wits till the diſpute between Roſſeau and de la Motte ſoon gave him a diſguſt for theſe trifling ſocieties. In 1707, he gained the prize of eloquence at the French Academy: and another next-year at the Academy des jeux Floraux. About this time M. Reaumur, who was his relation, came to Paris, and took leſſons in geometry under the ſame maſter, Guinée. Henault introduced him to the Abbé Bignon, and this was the firſt ſtep of his illuſtrious courſe. In 1713 he brought a tragedy on the ſtage, under the diſguiſed name of Fuſelier. As he was known to the public only by ſome ſlighter pieces, "Cornelia the Veſtal" met with no better ſucceſs. He therefore locked it up without printing. In his old age his paſſion for theſe ſubjects reviving, and Mr Horace Walpole being at Paris in 1768, and having formed a friendſhip with him as one of the moſt amiable men of his nation, obtained this piece, and had it printed at a preſs which he had at his country ſeat, from whence a beautiful edition of Lucan had before iſſued. In 1751 M. Henault, under a borrowed name, brought out a ſecond tragedy, intitled, "Marius," which was well received and printed. He had been admitted counſellor in parliament in 1706, with a diſpenſation on account of age; and in 1710 preſident of the firſt chamber of inqueſts. Theſe important places, which he determined to fill in a becoming manner, engaged him in the moſt ſolid ſtudies. The excellent work of M. Domat charmed him, and made him eager to go back to the fountain head. He ſpent ſeveral years in making himſelf maſter of the Roman law, the ordonnances of the French king, their cuſtoms, and public laws. M. de Morville, procureur-general of the great council, being appointed ambaſſador to the Hague in 1718, engaged M. Henault to accompany him. His perſonal merit ſoon introduced him to the acquaintance of the moſt eminent perſonages at that time there. The grand penſionary, Heinſius, who, under the exterior of Lacedemonian ſimplicity, kept up all the haughtineſs of that people, loſt with him all that hauteur which France itſelf had experienced from him in the negociations of the treaty of Utrecht. The agitation which all France felt by Law's ſyſtem, and the conſequent ſending of the parliament into exile, was a trial to the wiſe policy of the preſident Henault. His friendſhip for the firſt preſident, De Meſmes, led him to ſecond all the views of that great magiſtrate: he took part in all the negociations, and was animated purely by the public good, without any private advantage. On the death of the cardinal du Bois, in 1723, he ſucceeded in his place at the French Academy. Cardinal Fleury recommended him to ſucceed himſelf as director, and he pronounced the eloge of M. de Malezieux.

Hiſtory was M. Henault's favourite ſtudy; not a bare collection of dates, but a knowledge of the laws and manners of nations; to obtain which he drew inſtruction from private converſations, a method he ſo ſtrongly recommends in his preface, after having thus diſcuſſed the moſt important points of public law, he undertook to collect and publiſh the reſult of his inquiries, and he is deſervedly accounted the firſt framer of chronological abridgments; in which, without ſtopping at detached facts, he attends only to thoſe which form a chain of events that perfect or alter the government and character of a nation, and traces only the ſprings which exalt or humble a nation, extending or contracting the ſpace it occupies in the world. His work has had the fortune of thoſe literary phenomena, where novelty and merit united excite minds eager after glory, and fire the ardour of young writers to preſs after a guide whom few can overtake. The firſt edition of the work, the reſult of 40 years reading, appeared in 1744, under the auſpices of the chancellor Dagueſſeau, with the modeſt title of *an Eſſay*. The ſucceſs it met with ſurpriſed him. He made continual improvements in it, and it has gone through nine editions, and been tranſlated into Italian, Engliſh, and German, and even into Chineſe. As the beſt writings are not ſecure from criticiſm, and are indeed the only ones that deſerve it, the author read to the academy of Belles Lettres a defence of his abridgement. All the ages and events of the French monarchy being preſent to his mind, and his imagination and memory being a vaſt theatre whereon he beheld the different movements and parts of the actors in the ſeveral revolutions, he determined to give a ſpecimen of what paſt in his own mind, and to reduce into the form of a regular drama, one of the periods of French hiſtory, the reign of Francis II. which, though happy only by being ſhort, appeared to him one of the moſt important by its conſequences, and moſt eaſy to be confined within the ſtage bounds. His friend the chancellor highly approved the plan, and wiſhed it to be printed. It accordingly went through five editions; the harmony of dates and facts is exactly obſerved in it, and the paſſions intereſted without offence to hiſtoric truth.

In 1755, he was choſen an honorary member of the academy of Belles Lettres, being then a member of the academies of Nanci, Berlin, and Stockholm. The queen appointed him ſuperintendant of her houſe. His natural ſprightlineſs relieved her from the ſerious attendance on his private morning lectures. The company of perſons moſt diſtinguiſhed by their wit and birth, a table more celebrated for the choice of the gueſts than its delicacies, the little comedies ſuggeſted by wit, and executed by reflections, united at his houſe all the pleaſures of an agreeable and innocent life. All the members of this ingenious ſociety contributed to render it agreeable, and the preſident was not behind any. He compoſed three comedies: *La Petite Maiſon*, *La Jaloux de Soi meme*, and *Le Reveil d'Epimenide*. The ſubject of the laſt was the Cretan philoſopher, who is pretended to have ſlept 27 years. He is introduced fancying that he had ſlept but one night, and aſtoniſhed at the change in the age of all around him: he miſtakes his miſtreſs for his mother; but diſcovering his miſtake, offers to marry her, which ſhe refuſes, though he ſtill continues to love her. The queen was particularly pleaſed with this piece. She ordered the preſident to reſtore the philoſopher's miſtreſs to her former youth: he introduced Hebe, and this epiſode produced an agreeable entertainment. He was now in ſuch favour with her majeſty, that on the place of ſuperintendant becoming vacant by the death of M. Bernard de Conbert maſter of requeſts, and the ſum he had paid for it being loſt to the family, Henault ſolicited it in favour of ſeveral perſons, till at laſt the queen beſtowed it on himſelf, and conſented that he ſhould divide the profits with his predeceſſors's widow. On the queen's death he held the ſame place under the dauphineſs.

A delicate conſtitution made him liable to much illneſs; which, however, did not interrupt the ſerenity of his mind. He made ſeveral journeys to the waters of Plombieres: in one of theſe he viſited the depoſed king Staniſlaus at Luneville; and in another accompanied his friend the marquis de Pauliny, ambaſſador to Switzerland. In 1763 he drew near his end. One morning, after a quiet night, he felt an oppreſſion, which the faculty pronounced a ſuffocating cough. His confeſſor being ſent to him, he formed his reſolution without alarm. He has ſince ſaid, that he recollected having then ſaid to himſelf, "What do I regret?" and called to mind that ſaying of Madame de Sevigne, "I leave here only dying creatures." He received the ſacraments. It was believed the next night would be his laſt; but by noon next day he was out of danger. "Now (ſaid he) I know what death is. It will not be new to me any more." He never forgot it during the following ſeven years of his life, which, like all the reſt, were gentle and calm. Full of gratitude for the favours of Providence, reſigned to its decrees, offering to the Author of his being a pure and ſincere devotion; he felt his infirmities without complaining, and perceived a gradual decay with unabated firmneſs. He died Dec. 24. 1771, in his 86th year. He married in 1714 a daughter of M. le Bas de Montargis keeper of the royal treaſure, &c. who died in 1728 without leaving any iſſue.

HENDECAGON, in geometry, a figure that hath eleven ſides and as many angles.

HENED-PENNY, in old writers, a cuſtomary payment of money inſtead of hens at Chriſtmas. It is mentioned in a charter of king Edward III. Mon. Angl. tom. ii. p. 327. Du-Cange is of opinion it may be *hen-penny*, *gallinagium*, or a compoſition for eggs; but Cowel thinks it is miſprinted *hened-penny* for *heved-penny*, or *head-penny*.

HENLEY, a town of Oxfordſhire in England, ſeated on the river Thames, over which there is a handſome bridge. It ſends malt, corn, and other things, to London in barges. W. Long. 0. 40. N. Lat. 51. 34.

Henley, a town of Warwickſhire in England, ſeated on the river Alne, in W. Long. 1. 45. N. Lat. 52. 18.

Henley (John), better known by the appellation of *Orator Henley*, a very ſingular character, was born in Melton-Moubray, Leiceſterſhire, in 1691. His father, the Rev. Simon Henley, and his grandfather by his mother's ſide (John Dowel, M. A.), were both vicars of that pariſh. Having paſſed his exerciſes at Cambridge, and his examination for the degree of B. A. with the particular approbation of Mr Field, Mr Smales, and the maſters of the college, he returned to his native place, where he was firſt deſired by the truſtees of the ſchool in Melton to aſſiſt in, and then to take the direction of that ſchool; which he increaſed and raiſed from a declining to a flouriſhing condition. He eſtabliſhed here a practice of improving elocution by the public ſpeaking of paſſages in the claſſics, morning and afternoon, as well as orations, &c. Here he was invited by a letter from the Rev. Mr Newcombe to be a candidate for a fellowſhip in St John's, but as he had long been abſent, and therefore leſſened his perſonal intereſt, he declined appearing for it. Here likewiſe he began his "Univerſal Grammar," and finiſhed ten languages, with diſſertations prefixed, as the moſt ready introduction to any tongue whatever. In the beginning of this interval he wrote his poem on "Eſther," which was approved by the town, and well received. He was ordained a deacon by Dr Wake, then biſhop of Lincoln; and after having taken his degree of M. A. was admitted to prieſt's orders by Dr Gibſon, his ſucceſſor in that ſee. He formed an early reſolution to improve himſelf in all the advantages of books and converſation the moſt effectually, on the firſt opportunity, at London. But he laid the baſis of future proficiency in aſſiſting at the curacy of his native town; where he preached many occaſional ſermons, particularly one at the aſſizes at Leiceſter: he then gave a voluntary warning for the choice of a new maſter and curate, and came to town recommended by above 70 letters from the moſt conſiderable men in the country, both of the clergy and laity; but againſt the inclination of his neighbours and his ſchool, which was now, as from his firſt entrance upon it, ſtill advancing: and his method being eſtabliſhed and approved, one of his own ſcholars was appointed to ſucceed him. —In town he publiſhed ſeveral pieces, as a tranſlation of Pliny's Epiſtles, of ſeveral works of Abbe Vertot, of Montfaucon's Italian Travels in folio, and many other lucubrations. His moſt generous patron was the earl of Macclesfield, who gave him a benefice in the country, the value of which to a reſident would have been above 80l. a year; he had likewiſe a lecture in the city; and preached more charity ſermons about town, was more numerouſly followed, and raiſed more for the poor children, than any other preacher, however dignified or diſtinguiſhed. But when he preſſed his deſire and promiſe from a great man of being fixed in town, it paſſed in the negative. He took the people (it ſeems) too much from their pariſh-churches; and as he was not ſo proper for a London divine, he was very welcome, notwithſtanding all difficulties, to be a rural paſtor. But it was not for a ſecond ruſtication, as he informs us†, that he left the fields and the ſwains of Arcadia to viſit the great city: and as he knew it was as lawful to take a licence from the king and parliament at Hicks's-hall as at Doctors Commons (ſince the miniſterial powers of this kingdom are and ought to be parliamentary only), he freely, without compulſion, or being deſired or capable of being compelled to reſide in the country, gave up his benefice and lecture, certainties for an uncertainty; believing the public would be a more hoſpitable protector of learning and ſcience, than ſome of the upper world in his own order.

Mr Henley, in anſwer to a cavil (that he borrowed from books), propoſed, "that if any perſon would ſingle out any celebrated diſcourſe of an approved writer, dead or living, and point out what he thought excellent in it, and the reaſons; he would ſubmit it to the world, whether the moſt famed compoſition might not be ſurpaſſed in their own excellency, either on that or any different ſubject."

Henley preached on Sundays upon theological matters, and on Wedneſdays upon all other ſciences. He declaimed ſome years againſt the greateſt perſons, and occaſionally, ſays Warburton, did Pope that honour. The poet in return thus blazons him to infamy:

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† *Oratory Tranſact.* p. 12, &c.

> " But, where each ſcience lifts its modern type.
> " Hiſtory her pot, Divinity his pipe,
> " While proud Philoſophy repines to ſhow,
> " Diſhoneſt ſight! his breeches rent below;
> " Imbrown'd with native bronze, lo Henley ſtands,
> " Tuning his voice, and balancing his bands.
> " How fluent nonſenſe trickles from his tongue!
> " How ſweet the periods, neither ſaid nor ſung!
> " Still break the benches, Henley! with thy ſtrain,
> " While Kennet, Hare, and Gibſon preach in vain.
> " O great reſtorer of the good old ſtage,
> " Preacher at once and Zany of thy age!
> " O worthy thou of Ægypt's wiſe abodes,
> " A decent prieſt where monkies were the gods!
> " But Fate with butchers plac'd thy prieſtly ſtall,
> " Meek modern faith to murder, hack, and maul;
> " And bade thee live to crown Britannia's praiſe,
> " In Toland's, Tindal's, and in Woolſton's days."

This extraordinary perſon (who died October 14. 1756) ſtruck medals, which he diſperſed as tickets to his ſubſcribers: a ſtar riſing to the meridian, with this motto, *Ad ſumma*; and below. *Inveniam viam, aut faciam*. Each auditor paid 1 s. He was author of a weekly paper called The Hyp Doctor, for which he had 100 l. a year given him. Henley uſed every Saturday to print an advertiſement in the Daily Advertiſer, containing an account of the ſubjects he intended to diſcourſe on the enſuing evening at his oratory near Lincoln's-inn-fields, with a ſort of motto before it, which was generally a ſneer at ſome public tranſaction of the preceding week. Dr Cobden, one of Geo. II.'s chaplains, having, in 1748, preached a ſermon at St James's from theſe words, "Take away the wicked from before the king, and his throne ſhall be eſtabliſhed in righteouſneſs;" it gave ſo much diſpleaſure, that the Doctor was ſtruck out of the liſt of chaplains; and the next Saturday the following parody of his text appeared as a motto to Henley's advertiſement:

> " Away with the wicked before the king,
> " And away with the wicked behind him;
> " His throne it will bleſs
> " With righteouſneſs,
> " And we ſhall know where to find him."

His audience was generally compoſed of the loweſt ranks; and it is well known that he even collected an infinite number of ſhoe-makers, by announcing that he could teach them a ſpeedy mode of operation in their buſineſs, which proved only to be, the making of ſhoes by cutting off the tops of ready-made boots.

HENNA, or ALHENNA. See LAWSONIA.

HENNEBERG, a county of Germany, in the circle of Franconia. It is bounded on the north by Thuringia, on the weſt by Heſſe, on the ſouth by the biſhoprick of Wertſburg, and on the eaſt by that of Bamberg. It abounds in mountains and woods; and it is populous, and pretty fertile. Mainingen is the capital town.

HENNEBERG, a town of Germany, in the circle of Franconia, which gives title to a county of the ſame name with a caſtle. E. Long. 9. 17. N. Lat. 50. 40.

HENNEBON, a town of France in Bretagne, in the dioceſe of Vannes. It is inhabited by rich merchants and is ſeated on the river Blavet, in W. Long. 2. 13. N. Lat. 47. 48.

HENOTICUM, (Ηνοτικον, q. d. "reconciliative;" of ενοω "I unite") in church hiſtory, a famous edict of the emperor Zeno, publiſhed A. D. 482, and intended to reconcile and reunite the Eutychians with the Catholics. It was procured of the emperor by means of Acacius, patriarch of Conſtantinople, with the aſſiſtance of the friends of Peter Mongus and Peter Trullo. The ſting of this edict lies here; that it repeats and confirms all that had been enacted in the councils of Nice, Conſtantinople, Epheſus and Chalcedon, againſt the Arians, Neſtorians, and Eutychians, without making any particular mention of the council of Chalcedon. It is in form of a letter, addreſſed by Zeno to the biſhops, prieſts, monks and people of Egypt and Libya. It was oppoſed by the catholics, and condemned in form by pope Felix II.

HENRICIANS, in eccleſiaſtical hiſtory, a ſect ſo called from Henry its founder, who, though a monk and hermit, undertook to reform the ſuperſtition and vices of the clergy. For this purpoſe he left Lauſanne in Switzerland, and removing from different places, at length ſettled at Thoulouſe in the year 1147, and there exerciſed his miniſterial function, till being overcome by the oppoſition of Bernard abbot of Clairval, and condemned by pope Eugenius III. at a council aſſembled at Rheims, he was committed to a cloſe priſon in 1148 where he ſoon ended his days. This reformer rejected the baptiſm of infants; ſeverely cenſured the corrupt manners of the clergy: treated the feſtivals and ceremonies of the church with the utmoſt contempt and held clandeſtine aſſemblies for inculcating his peculiar doctrines.

HENRY, or CAPE-HENRY, the ſouth cape of Virginia, at the entrance of Cheſapeak-bay. W. Long. 74. 50. N. Lat. 37. 0.

HENRY, the name of ſeveral emperors of Germany, and kings of England and France. See ENGLAND, FRANCE, and GERMANY.

HENRY IV. emperor of Germany in 1056 ſtyled *the Great*, was memorable for his quarrels with pope Gregory II. whom at one time he depoſed, for having preſumed to judge his ſovereign; but at another, dreading the effects of the papal anathemas, he had the weakneſs to ſubmit to the moſt humiliating perſonal ſolicitations and penances to obtain abſolution; which impolitic meaſure increaſed the power of the Pope, and alienated the affections of his ſubjects: thus circumſtanced, he reaſſumed the hero, but too late; marched with an army to Rome, expelled Gregory, depoſed him, and ſet up another pope. Gregory died ſoon after: but Urban II. and Paſcal II. ſucceſſively, excited his ambitious ſons, Conrad and Henry, to rebel againſt him, and the latter was crowned emperor by the title of Henry V. in 1106; and he had the inhumanity to arreſt his father, and to deprive him, not only of all his dignities, but even of the neceſſaries of life. The unfortunate Henry IV. was reduced to ſuch extremities (after having fought 62 battles in defence of the German empire), that he ſolicited the biſhop of Spire to grant him an under-chaunter's place in his cathedral, but was refuſed. He died the ſame year at Liege, aged 55, a martyr to the ignorance and ſuperſtition of the age, and to his own blind confidence in favourites and miſtreſſes.

HENRY IV. king of France (in 1589) and Navarre, juſtly ſtyled *the Great*, was the ſon of Anthony de Bourbon, chief of the Branch of Bourbon (ſo called from a fief of that name which fell to them by marriage with the heireſs of the eſtate). His mother was the daughter of Henry d'Albert, king of Navarre; a woman of a maſculine genius; intrepid, ſimple, and ruſtic in her manners, but deeply verſed in politics, and a zealous Proteſtant. Foreſeeing that her party would want ſuch a protector (for her huſband was a weak indolent prince), ſhe undertook the care of the education of the young hero: his diet was coarſe; his clothes neat, but plain; he always went bare-headed; ſhe ſent him to ſchool with the other children of the ſame age, and accuſtomed him to climb the rocks and neighbouring mountains, according to the cuſtom of the country. He was born in 1553; and in 1569, the 16th year of his age he was declared the Defender and Chief of the Proteſtants at Rochelle. The peace of St Germain, concluded in 1570, recalled the lords in the Proteſtant intereſt to court; and in 1572, Henry was married to Margaret de Valois, ſiſter to Charles IX king of France. It was in the midſt of the rejoicing for theſe nuptials that the horrid maſſacre of Paris took place. Henry was reduced, by this infernal ſtroke of falſe policy, to the alternative of changing his religion or being put to death: he choſe the former, and was detained priſoner of ſtate three years. In 1587 he made his eſcape; put himſelf at the head of the Huguenot party, expoſing himſelf to all the riſks and fatigues of a religious war, often in want of the neceſſaries of life, and enduring all the hardſhips of the common ſoldier: but he gained a victory this year at Courtras, which eſtabliſhed his reputation in arms, and endeared him to the Proteſtants. On the death of Henry III. religion was urged as a pretext for one half of the officers of the French army to reject him, and for the leaguers not to acknowledge him. A phantom, the cardinal de Bourbon, was ſet up againſt him; but his moſt formidable rival was the duke de Mayenne: however, Henry, with few friends, fewer important places, no money, and a very ſmall army, ſupplied every want by his activity and valour. He gained ſeveral victories over the duke: particularly that of Ivri in 1590 memorable for his heroic admonition to his ſoldiers: "If you love your enſigns, rally by my white plume, you will always find it in the road to honour and glory." Paris held out againſt him, notwithſtanding his ſucceſſes; he took all the ſuburbs in one day: and might have reduced the city by famine, if he had not humanely ſuffered his own army to relieve the beſieged; yet the bigotted friars and prieſts in Paris all turned ſoldiers, except four of the Mendicant order; and made daily military reviews and proceſſions, the ſword in one hand and the crucifix in the other, on which they made the citizens ſwear rather to die with famine than to admit Henry. The ſcarcity of proviſions in Paris at laſt degenerated to an univerſal famine: bread had been ſold, whilſt any remained, for a crown the pound, and at laſt it was made from the bones of the charnel-houſe of St Innocents; human fleſh became the food of the obſtinate Pariſians, and mothers ate the dead bodies of their children. In fine the duke of Mayenne, ſeeing that neither Spain nor the league would ever grant him the crown, determined to aſſiſt in giving it to the lawful heir. He engaged the ſtates to hold a conference with the chiefs of both parties; which ended in Henry's abjuration of the Proteſtant religion at St Dennis, and his conſecration at Chartres in 1593. The following year Paris opened its gates to him; in 1596, the duke of Mayenne was pardoned; and in 1598, peace was concluded with Spain. Henry now ſhewed himſelf doubly worthy of the throne, by his encouragement of commerce, the fine arts, and manufactures, and by his patronage of men of ingenuity and ſound learning of every country: but though the fermentations of Romiſh bigotry were calmed, the leaven was not deſtroyed; ſcarce a year paſſed without ſome attempt being made on this real father of his people; and at laſt the monſter Ravaillac ſtabbed him to the heart in his coach, in the ſtreets of Paris, on the 14th of May 1610, in the 57th year of his age and 22d of his reign.

Henry VIII. king of England, was the ſecond ſon of Henry VII. by Elizabeth the eldeſt daughter of Edward IV. He was born at Greenwich, on the 28th of June 1491. On the death of his brother Arthur, in 1502, he was created prince of Wales; and the following year betrothed to Catharine of Arragon, prince Arthur's widow, the Pope having granted a diſpenſation for that purpoſe. Henry VIII. acceded to the throne, on the death of his father, the 22d of April 1509, and his marriage with Catharine was ſolemnized about two months after. In the beginning of his reign he left the government of his kingdom entirely to his miniſters; and ſpent his time chiefly in tournaments, balls, concerts, and other expenſive amuſements. We are told that he was ſo extravagant in his pleaſures, that, in a very ſhort time, he entirely diſſipated 1,800,000 l. which his father had hoarded. This will ſeem leſs wonderful, when the reader is informed, that gaming was one of his favourite diverſions. Nevertheleſs he was not ſo totally abſorbed in pleaſure, but he found leiſure to ſacrifice to the reſentment of the people two of his father's miniſters, Empſon and Dudley. A houſe in London, which had belonged to the former of theſe, was in 1510 given to Thomas Wolſey, who was now the king's almoner, and who from this period began to inſinuate himſelf into Henry's favour. In 1513, he became prime miniſter, and from that moment governed the king and kingdom with abſolute power. In this year Henry declared war againſt France, gained the battle of Spurs, and took the towns of Terouenne and Tournay; but before he embarked his troops, he beheaded the earl of Suffolk, who had been long confined in the tower. In 1521, he ſacrificed the duke of Buckingham to the reſentment of his prime miniſter Wolſey, and the ſame year obtained from the Pope the title of *Defender of the Faith*.

Henry, having been 18 years married, grew tired of his wife, and in the year 1527 reſolved to obtain a divorce; but after many fruitleſs ſolicitations, finding it impoſſible to perſuade the Pope to annul his marriage with Catharine, he eſpouſed Ann Bullen in the year 1531. During this interval his favourite Wolſey was diſgraced, and died; Henry threw off the Papal yoke, and burnt three Proteſtants for hereſy. In 1535, he put to death Sir Thomas Moore, Fiſher, and others, for denying his ſupremacy, and ſuppreſſed all the leſſer monaſteries.

His moſt ſacred majeſty, having now poſſeſſed his ſecond queen about five years, fell violently in love with lady Jane Seymour. Ann Bullen was accuſed of adultery with her own brother, and with three other perſons: ſhe was beheaded the 19th of May

Henry.

1536. He married Jane Seymore the day following. In 1537, he put to death five of the noble family of Kildare, as a terror to the Iriſh, of whoſe diſloyalty he had ſome apprehenſions; and in the year following he executed the marquis of Exeter, with four other perſons of diſtinction, for the ſole crime of correſponding with cardinal Pole. In 1538 and 1539, he ſuppreſſed all the monaſteries in England, and ſeized their revenues for his own uſe. The queen having died in childbed, he this year married the princeſs Ann of Cleves: but diſliking her perſon, immediately determined to be divorced; and his obſequious parliament and convocation unanimouſly pronounced the marriage void, for reaſons too ridiculous to be recited: but this was not all: Henry was ſo incenſed with his miniſter and quondam favourite, Cromwell, for negociating this match, that he revenged himſelf by the hand of the executioner. Yet this was not the only public murder of the year 1540. A few days after Cromwell's death, ſeveral perſons were burnt for denying the king's ſupremacy, and other articles of hereſy.

His majeſty being once more at liberty to indulge himſelf with another wife, fixed upon Catharine Howard, niece to the duke of Norfolk. She was declared queen in Auguſt 1540; but they had been privately married ſome time before. Henry, it ſeems, was ſo entirely ſatisfied with this lady, that he daily bleſſed God for his preſent felicity; but that felicity was of ſhort duration: he had not been married above a year, before the queen was accuſed of frequent proſtitution, both before and ſince her marriage: ſhe confeſſed her guilt, and was beheaded in February 1542. In July 1543, he married his ſixth wife, the lady Catharine Parr, the widow of John Nevil lord Latimer, and lived to the year 1547 without committing any more flagrant enormities: but finding himſelf now approach towards diſſolution, he made his will; and, that the laſt ſcene of his life might reſemble the reſt, he determined to end the tragedy with the murder of two of his beſt friends and moſt faithful ſubjects, the duke of Norfolk and his ſon the earl of Surrey. The earl was beheaded on the 19th of January; and the duke was ordered for execution on the 29th, but fortunately eſcaped by the king's death on the 28th. They were condemned without the ſhadow of a crime; but Henry's political reaſon for putting them to death, was his apprehenſion that, if they were ſuffered to ſurvive him, they would counteract ſome of his regulations in religion, and might be troubleſome to his ſon. Henry died on the 28th of January, 1547, in the 56th year of his age, and was buried at Windſor.

As to his character, it is pretty obvious from the facts above related. Lord Herbert palliates his crimes, and exaggerates what he calls his *virtues*. Biſhop Burnet ſays, "he was rather to be reckoned among the *great* than the *good* princes." He afterwards acknowledges, that "he is to be numbered among the ill princes;" but adds, "I cannot rank him with the worſt." Sir Walter Raleigh, with infinitely more juſtice, ſays, "if all the pictures and patterns of a mercileſs prince were loſt to the world, they might again be painted to the life out of the hiſtory of this king." He was indeed a mercileſs tyrant, a ſcurvy politician, a fooliſh bigot, a horrible aſſaſſin. See ENGLAND, nº 253—292.

HENRY *of Huntingdon*, an Engliſh hiſtorian, of the 12th century, was canon of Lincoln, and afterwards archdeacon of Huntingdon. He wrote, 1. A hiſtory of England, which ends with the year 1154. 2. A continuation of that of Bede. 3. Chronological tables of the kings of England. 4. A ſmall Treatiſe on the contempt of the world. 5. Several books of epigrams and love verſes. 6. A poem on herbs; all which are written in Latin.—His invocation of Apollo and the goddeſſes of Tempe, in the exordium of his poem on herbs, may not be unacceptable as a ſpecimen of his poetry.

> Vatum magne parens, herbarum Phœbe repertor,
> Voſque, quibus reſonant Tempe jocoſa, Deæ!
> Si mihi ſerta prius hedera florente paraſtis,
> Ecce meos flores, ſerta parata fero.

HENRY *of Suſa*, in Latin *de Segufio*, a famous civilian and canoniſt of the 13th century, acquired ſuch reputation by his learning, that he was called *the ſource and ſplendor of the law*. He was archbiſhop of Embrun about the year 1258, and cardinal biſhop of Oſtia in 1262. He wrote *A ſummary of the canon and civil law*; and *a commentary on the book of the decretals*, compoſed by order of Alexander IV.

HENRI *the Minſtrel*, commonly called *Blind Harry*, an ancient Scottiſh author, diſtinguiſhed by no particular ſurname, but well known as the compoſer of an hiſtorical poem reciting the atchievements of Sir William Wallace. This poem continued for ſeveral centuries to be in great repute; but afterwards ſunk into neglect, until very lately that it has been again releaſed from its obſcurity by a very neat and correct edition publiſhed at Perth under the inſpection and patronage of the earl of Buchan.

It is difficult to aſcertain the preciſe time in which this poet lived, or when he wrote his hiſtory, as the two authors who mention him ſpeak ſomewhat differently. Dempſter, who wrote in the beginning of the laſt century, ſays that he lived in the year 1361: but Major, who was born in the year 1446, ſays that he compoſed his book during the time of his infancy, which we muſt therefore ſuppoſe to have been a few years poſterior to 1446; for if it had been compoſed that very year, the circumſtance would probably have been mentioned. As little can we ſuppoſe, from Mr Dempſter's words, that Henry was born in 1361; for though he ſays that he *lived* in that year, we muſt naturally imagine rather that he was then come to the years of maturity, or began to diſtinguiſh himſelf in the world, than that he was only born at that time. The author of the diſſertation on his life, prefixed to the new edition of the poem, endeavours to reconcile matters in the following manner: "It is not indeed impoſſible that he might be born in or about that year (1361). In the time of Major's infancy he might be about 83 years of age. In that caſe, it may be ſuppoſed that it was the work of his old age to collect and put in order the detached pieces of his Hiſtory of Wallace, which he had probably compoſed in thoſe parts of the country where the incidents were ſaid to have happened."

We are entirely ignorant of the family from which Henry was deſcended; though, from his writings, we ſhould be led to ſuppoſe that he had received a liberal education. In them he diſcovers ſome knowledge in divinity, claſſical hiſtory, and aſtronomy, as well as of the languages. In one place he boaſts of his celibacy, which ſeems to indicate his having engaged himſelf in ſome of the religious orders of that age. From what Major ſays further of him, we may ſuppoſe his profeſſion to have been that of a travelling bard; though it does not appear that he was ſkilled in muſic, or had any other profeſſion than that juſt mentioned. His being blind from his birth, indeed, makes this not improbable; though even this circumſtance is not inconſiſtent with the ſuppoſition of his being a religious mendicant. "the particulars (ſays Major) which he heard related by the vulgar, he wrote in the vulgar verſe, in which he excelled. By reciting his hiſtories before princes or great men, he gained his food and raiment, of which he was worthy." It is thus probable that he would be a frequent viſitor at the Scottiſh court; and would be made welcome by thoſe great families who could boaſt of any alliance with the hero himſelf, or took pleaſure in hearing his exploits or thoſe of his companions.

With regard to the authenticity of his hiſtories, Major informs us only that "he does not believe every thing that he finds in ſuch writings;" but from other teſtimonies it appears, that he conſulted the very beſt authorities which could at that time be had. Though, according to the moſt early account of Henry, it appears to have been at leaſt 56 years after the death of Wallace that Henry was born, yet he is ſaid to have conſulted with ſeveral of the deſcendants of thoſe who had been the companions of that hero while he atchieved his moſt celebrated exploits, and who were ſtill capable of aſcertaining the veracity of what he publiſhed. The principal of theſe were Wallace of Craigie and Liddle of that Ilk; who, he ſays, perſuaded him to omit in his hiſtory a circumſtance which he ought to have inſerted. Beſides theſe, he conſulted with the principal people of the kingdom; and he utterly diſclaims the idea of having adhered entirely to any unwritten tradition, or having been promiſed any reward for what he wrote. His chief authority, according to his own account, was a Latin hiſtory of the exploits of Sir William, written partly by Mr John Blair and partly by Mr Thomas Gray, who had been the companions of the hero himſelf. Henry's account of theſe two authors is to the following purpoſe: "They became acquainted with Wallace, when the latter was only about 16 years of age, and at that time a ſtudent at the ſchool of Dundee; and their acquaintance with him continued till his death, which happened in his 29th year. Mr John Blair went from the ſchools in Scotland to Paris, where he ſtudied ſome time, and received prieſts orders. He returned to Scotland in 1296, where he joined Wallace, who was bravely aſſerting the liberties of his country. Mr Thomas Gray, who was parſon of Libberton, joined Wallace at the ſame time. They were men of great wiſdom and integrity, zealous for the freedom of Scotland; and were preſent with Wallace, and aſſiſting to him, in moſt of his military enterpriſes. They were alſo his ſpiritual counſellors, and adminiſtered to him godly comfort. The hiſtory written by theſe two clergymen was atteſted by William Sinclair biſhop of Dunkeld, who had himſelf been witneſs to many of Wallace's actions. The biſhop, if he had lived longer, was to have ſent their book to Rome, for the [illegible] ſanction of the pope's authority."

The book which Henry thus appeals to as his principal authority is now loſt, ſo that we have no opportunity of comparing it with what he has written. The character given by Dempſter of Henry, however, is more favourable than that by Major. He tells us, that "he was blind from his birth; a man of a ſingularly happy genius; he was indeed another Homer. He did great honour to his native country, and raiſed it above what was common to it in his age. He wrote, in the vernacular verſe, an elaborate and grand work, in ten books, of the deeds of William Wallace." In this account there is a miſtake; for the poem contains eleven or twelve books: but Dempſter, who wrote in a foreign country, and had not a printed copy of Henry's work by him when he wrote his eulogium, is excuſable in a miſtake of this kind.

With regard to his poetical merit, it muſt undoubtedly rank very far below that of Homer; whom indeed he ſcarcely reſembles in any other reſpect than that he went about as Homer is ſaid to have done, reciting the exploits of the heroes of his country, and that he was blind. In this laſt circumſtance, however, he was ſtill worſe than Homer; for Henry was born blind, but Homer became blind after he had been advanced in years. Hence Henry, even ſuppoſing his genius to have been equal to that of Homer, muſt have lain under great diſadvantages; and theſe are very evident in his works. The deſcriptive parts are evidently deficient, and the alluſions taken principally from the way in which nature affects thoſe ſenſes of which he was poſſeſſed. Thus, ſpeaking of the month of March, he calls it *the month of right digeſtion*, from the ſuppoſed *fermentation* then begun in the earth. Of April he ſays that the earth is then *able*, or has obtained a power of producing its different vegetables; and of this productive power he appears to have been more ſenſible than of the effects which commonly ſtrike us moſt ſenſibly. "By the working of nature (ſays he), the fields are again clothed, and the woods acquire their worthy weed of green. May brings along with it great celeſtial gladneſs. The heavenly hues appear upon the tender green." In another place he deſcribes the deity of ſome river, whom he calls *Nymphæus*, "building his bower with *oil and balm*, fulfilled of ſweet odour." By reaſon of theſe diſadvantages, he ſeldom makes uſe of ſimilies with which Homer abounds ſo much; and few miraculous interpoſitions are to be found in his poem, though the prophecies of Thomas Lermont, commonly called *The Rhymer*, and a prophetic dream of Wallace himſelf, are introduced, as well as the ghoſt of Fawdon, a traitor who had joined Wallace, and whom the latter in a fit of paſſion had killed. In other reſpects, the ſame inextinguiſhable thirſt of blood which Homer aſcribes to his hero Achilles is aſcribed to Wallace, though in all probability the mind of Wallace was too much enlightened to admit of ſuch ſentiments. A vaſt degree of courage and perſonal ſtrength are aſcribed to him, by means of which the exploits of the whole army are in effect transferred to a ſingle perſon. As long as he is inveſted with the command, the Scots are victorious and irreſiſtible; when deprived of it, they are enſlaved and undone. After ſtruggling for ſome time againſt an inveterate and he is [illegible] powerful faction diſdaining to feign ſubmiſſion, freedom of his country. The poem, on the whole, is valuable, on account of our being able to trace, by its means, the progreſs which the Engliſh language had made at that time in Scotland; the manners of the Scots in that age; as the favourite dreſs of green which at that time was the taſte of the inhabitants of Scotland, &c. With regard to the authenticity of his relations, it is impoſſible to ſuppoſe any other thing than that they are partly true and partly falſe. The general thread of the ſtory may undoubtedly be looked upon to be genuine, though embelliſhed with poetical fictions and exaggerations; and his conſtant appeals to the book already mentioned, though it is now loſt, muſt be looked upon as a ſtrong teſtimony in his favour: for we cannot ſuppoſe that at the time he lived, when we may ſay that the tranſactions which he relates were recent, he would have had the confidence to appeal to a book which had not been generally known to have an exiſtence; and its being now loſt can never be any argument againſt it, when we conſider the difficulty there was of preſerving books before the invention of printing; the confuſions in which Scotland was frequently involved; and that the exploits of Wallace, who muſt be ſuppoſed to have been a kind of rival to the great Bruce, could not be ſo agreeable to the court as thoſe of the more ſucceſsful hero; and therefore the hiſtory of them might be ſuffered to fall into oblivion, though written in elegant Latin, while a moſt ridiculous poem in that language on the battle of Bannockburn has been preſerved to this day.

Henry Prince of Wales, eldeſt ſon of king James VI. of Scotland by his queen Anne ſiſter of the king of Denmark, and one of the moſt accompliſhed princes of the age in which he lived, was born on the 19th of February 1594. The birth of the prince was announced by embaſſies to many foreign powers, with invitations to be preſent at the ceremony of his baptiſm, which was thus delayed for a conſiderable time. Mr Peter Young, who, along with the celebrated George Buchanan, had been preceptor to his majeſty, was ſent to the courts of Denmark, Brunſwic, and Mecklenburg, the duke of Mecklenburg being great-grandfather to the prince by the mother's ſide; the laird of Eaſt Weems to France and England; and Sir Robert Keith and captain Murray provoſt of St Andrew's, to the States General, who at that time were ſtruggling againſt the Spaniſh tyranny, and not yet declared a free ſtate. All theſe ambaſſadors were cordially received, and others appointed in return except by the courts of France and England. Henry IV. at that time king of France, though the Scots ambaſſador had formerly been one of his own ſervants, neither made any preſent, nor appointed an ambaſſador. Queen Elizabeth had deſigned to act in the ſame manner till ſhe heard of the behaviour of Henry; after which ſhe honoured James by appointing an ambaſſador of very high rank, Robert earl of Suſſex. This ambaſſador, however was ſo long of making his appearance, that the queen imagined the ceremony would be over before his arrival, for which reaſon ſhe ſent a meſſage to the earl, commanding him in that caſe not to enter Scotland nor deliver her preſent. But James had been more obſequious; and not only delayed the ceremony till the Engliſh ambaſſador arrived, but diſtinguiſhed [illegible] canopy carried over his ford, Buccleugh, Duddope, and Traquair. The ceremony was performed with great magnificence; after which the ambaſſadors preſented their gifts. That from the United States was the moſt valuable. It conſiſted of two gold cups worth 12,400 crowns, with a box of the ſame metal, weighing in all about 400 ounces, containing beſides the grant of a penſion of 5000 florins annually to the prince for life. The Engliſh ambaſſador gave a cupboard of plate curiouſly wrought, and valued at 3000l. ſterling; and the Daniſh ambaſſador two gold chains, one for the queen and another for the prince. The baptiſm was celebrated on the 6th of September 1594, and the child named Frederick-Henry and Henry-Frederick.

The young prince was now committed to the care of the earl of Mar, who was aſſiſted in this important charge by Annabella counteſs-dowager of Mar, daughter of William Murray of Tullibardine, and paternal anceſtor of the preſent duke of Athol. This lady was remarkable for the ſeverity of her temper, ſo that the prince met with little indulgence while under her tuition; notwithſtanding which he ſhowed great affection for his governeſs all the time ſhe had the care of him. Next year, however (1595), the queen engaged the chancellor, lord Thirleſtane, in a ſcheme to get the prince into her own power; but the king having found means to diſſuade her majeſty from the attempt, ſhowed afterwards ſuch marks of diſpleaſure to the chancellor, that the latter fell into a languiſhing diſorder and died of grief.

In his ſixth year prince Henry was committed to the care of Mr Adam Newton a Scotſman, eminently ſkilled in moſt branches of literature, but particularly diſtinguiſhed for his knowledge of the Latin language. Under his tutorage the prince ſoon made great progreſs in that language, as well as in other branches of knowledge; inſomuch that before he had completed his ſixth year his father wrote for his uſe the treatiſe intitled *Baſilikon Doron*, thought to be the beſt of all his works.

In his ſeventh year, prince Henry began his correſpondence with foreign powers. His firſt letter was to the States of Holland; in which he expreſſed his regard and gratitude for the good opinion they had conceived of him, and of which he had been informed by ſeveral perſons who had viſited that country; concluding with a requeſt that they would make uſe of his intereſt with his father in whatever he could ſerve them, promiſing alſo his ſervice in every other reſpect in which he could be uſeful, until he ſhould be able to give farther inſtances of his good-will and affection.

At this early period the prince began to add to his literary accompliſhments ſome of the more martial kind, ſuch as riding, the exerciſe of the bow, pike, &c. as well as the uſe of fire-arms; and indeed ſuch was the attachment he ſhowed throughout his whole lifetime to military exerciſes, that had he attained the years of maturity, there can ſcarce be a doubt that he would have diſtinguiſhed himſelf in a moſt eminent manner. In all his exerciſes he made ſurpriſing progreſs; and not only in thoſe of the military kind, but in ſinging, dancing, &c. On his ninth birth-day he ſent a letter in Latin to the king, informing him that he had read over Terence's Hecyra, the third book of Phædrus's Fables, and two books of Cicero's Epiſtles; and that thing in the commendatory kind of epiſtles. His accompliſhments were ſoon ſpoken of in foreign countries; and theſe along with the general ſuſpicion that James favoured the Catholic party, probably induced pope Clement VIII. to make an attempt to get him into his hands. With this view he propoſed, that if James would entruſt him with the education of the young prince, he would advance ſuch ſums of money as would effectually eſtabliſh him on the throne of England. This happened a little before the death of Elizabeth, but James, notwithſtanding his ambition to poſſeſs the crown of England, of which he was not yet altogether certain, withſtood the temptation. He alledged, that it would be unnatural for him, as a father, to allow his ſon to be brought up in the belief of a doctrine which he himſelf did not believe: and even though he ſhould act in his private capacity in ſuch an unnatural manner, he could not anſwer for it to the nation, he being heir-apparent to the crown, and the kingdom at large much intereſted in whatever concerned him. On the death of the queen of England, James was obliged to leave Scotland in ſuch haſte, that he had no time to take a perſonal leave of his ſon, and therefore did ſo by letter, which was anſwered by the prince in Latin. The queen, however, who had been deſired to follow the king to London in three weeks, but to leave the prince in Scotland, thought proper to make another attempt to get her ſon into her own power. With this view ſhe took a journey to Stirling, where the prince, reſided but was oppoſed in her deſigns by the friends of the houſe of Mar; and this affected her ſo much that ſhe miſcarried of a child of which ſhe was then pregnant. The king, hearing of this misfortune, ordered the prince to be delivered to his mother; but refuſed to inflict any puniſhment on the earl of Mar, which the queen inſiſted upon, that nobleman having been with the king at London, and entirely innocent of the whole affair. Inſtead of puniſhing him, therefore, he cauſed him to be acquitted by an act of the public council at Sterling; inveſted him with the order of the garter; made him a grant of ſeveral abbey and other church lands; and raiſed him to the poſt of lord high treaſurer after the diſgrace of the earl of Somerſet; in which employment he continued till he could no longer perform the duties of his office through age and infirmity.

In the month of July this year (1603) prince Henry was inveſted with the order of the garter; after which he was preſented to the queen in his robes, and greatly commended by all who ſaw him on account of his majeſtic carriage and religious behaviour at the altar, as well as the quickneſs of his underſtanding and ready anſwers. Being obliged to leave London on account of the plague, he retired to Otelands, a royal palace near Weybridge in Surrey, where a ſeparate houſehold was appointed for him and his ſiſter Elizabeth. The appointment conſiſted at firſt of 70 ſervants, of whom 22 were to be above ſtairs and 48 below. In ſome weeks the number was augmented to 104, of whom 51 were above ſtairs and 53 below; but before the end of the year they were augmented to 141, of whom 56 were above ſtairs and 85 below. From Otelands he removed the ſame year to Nonſuch here in Surrey, and from thence to Hampton; after which he returned to his houſe at Otelands, his ſervants having all this time been kept on board-wages.

In the tenth year of his age, Henry began to ſhow a wonderful deſire of becoming maſter of all thoſe accompliſhments which are neceſſary to conſtitute a great prince. Without deſiſting from his attention to polite literature, he applied himſelf in the moſt aſſiduous manner to the knowledge of naval and military affairs. To give him the firſt rudiments of the former, a ſmall veſſel was conſtructed 28 feet long and 12 broad, curiouſly painted and carved; on board of which he embarked with ſeveral of the principal nobility, and ſailed down as far as Paul's Wharf, where, with the uſual ceremonies, he baptized it by the name of the *Diſdain.* Mr Pett the builder of this ſhip was recommended to the prince by the high admiral in ſuch ſtrong terms, that his highneſs took him immediately into his ſervice, and continued his favour to him as long as he lived.

Prince Henry now began to ſhow himſelf equally a patron of military men and of learning. His martial diſpoſition induced him to take notice of Colonel Edmondes, a brave Scots officer in the Dutch ſervice, who had raiſed himſelf ſolely by his merit. To him he applied for a ſuit of armour to be ſent over from Holland: but though the Colonel executed his commiſſion, he reaped no benefit from his highneſs's favour, dying in a ſhort time after the armour was purchaſed, before he had any opportunity of ſending it over. In matters of literature the prince appears to have been a very good judge. He patroniſed divines, and appears to have been naturally of a religious turn of mind. His attachment to the Proteſtant religion appears to have been exceſſive; as it never was in the power of the queen, who favoured the catholic party, to make the leaſt impreſſion upon him. Her machinations for this purpoſe were diſcovered by the French ambaſſador; who, in a letter dated June 7th 1604, informed his maſter of them, and that the Spaniards were in hopes of being able by her means to alter the religion in England, as well as to prejudice the prince againſt France, which the queen ſaid ſhe hoped that her ſon would one day be able to conquer like another Henry V. By another letter, of date 22d October the ſame year, the ambaſſador, after taking notice of the queen's immoderate ambition, adds, that ſhe uſed all her efforts to corrupt the mind of the prince, by flattering his paſſions, diverting him from his ſtudies, and repreſenting to him, out of contempt to his father, that learning was inconſiſtent with the character of a great general and conqueror; propoſing at the ſame time a marriage with the infanta of Spain. Notwithſtanding theſe remonſtrances, however, the prince continued to behave as uſual, and to patroniſe the learned no leſs than before. He preſented John Johnſton, one of the king's profeſſors at St Andrew's, with a diamond, for having dedicated to him an Hiſtorical deſcription of the kings of Scotland from the foundation of the monarchy to that time; after which the profeſſor added a *carmen encomiaſticum,* which was tranſmitted to his highneſs in November 1605. Many other authors alſo ſought and obtained his countenance. In 1606 Mr John Bond uſhered his edition of Horace into the world with a polite dedication to the prince, whom he highly compliments on account of the progreſs he had made in learning. In 1609 a book was ſent over to him from France by Sir George Carew, the Britiſh ambaſſador there, tending to diſprove the doctrine of the Catholics concerning the Church of Rome being the firſt of the Chriſtian Churches. The ſame year the learned Thomas Lydyat publiſhed his *Emendatio Temporum*, which appeared under the patronage of the prince; and with this performance his highneſs was ſo well pleaſed, that he took the author into his family to read to him, and made him his chronographer and coſmographer. Paul Buys or Buſius alſo ſent him a letter with a dedication of the ſecond part of his Pandects; in which he beſtows upon him the higheſt compliments on the great expectations which were formed of him, and of the hopes entertained by the reformed Chriſtian churches that he would prove a powerful ſupport to their cauſe, and an antagoniſt to the errors of Rome. In 1611 Dr Tooker, in his dedication of an Anſwer to Becanus a Jeſuit, who had written againſt a piece done by his majeſty himſelf, ſtyles his highneſs "the Mæcenas of all the learned." Another treatiſe againſt the ſame Becanus was alſo printed this year, and dedicated to the prince

Many other authors, whom our limits will not allow us to take notice of, were fond of dedicating their performances to his highneſs; nor was his correſpondence leſs extenſive than his condition. We have already taken notice of his having written his firſt public letter to the ſtates of Holland. He was congratulated by the elector palatine, afterwards married to the princeſs Elizabeth, on the diſcovery of the gun-powder-plot. On the ſame occaſion alſo Lord Spencer wrote him a letter, accompanying it with the preſent of a ſword and target "inſtruments (ſays he) fit to be about you in theſe treacherous times; from the which, I truſt God will ever protect your moſt royal father, &c." Previous to this he had correſponded in Latin with the doge of Venice, the landgrave of Heſſe, and the king of Denmark: in French with the duke of Savoy, and in Latin with the duke of Brunſwic and Uladiſlaus king of Poland; beſides a number of other eminent perſons too tedious to enumerate.

The great accompliſhments of Henry ſoon cauſed him to be taken notice of by the moſt eminent princes in Europe. In 1606 Henry IV. of France ordered his ambaſſador to pay him ſpecial regard on all occaſions. He deſired him likewiſe to ſalute the prince in the name of the dauphin, afterwards Louis XIII. and to inform him of the regard the latter had for him. A meſſage was alſo ſent by the ſame ambaſſador to M. de St Anthoine, appointed to be riding maſter to his highneſs, enjoining him to do his duty in that office; and aſſuring him that his majeſty would be as much pleaſed with it as if the ſervice had been done to himſelf. To theſe meſſages the prince returned very proper anſwers; and afterwards performed his exerciſe in the riding-ſchool before the ambaſſador himſelf, that the latter might ſend an account thereof to his maſter. On this occaſion he mounted two horſes, and acquitted himſelf ſo well that the ambaſſador, in a letter to M. de Villeroy, the French ſecretary, gave him the character of "a prince who promiſed very much, and whoſe friendſhip could not but be one day of advantage." Having then ſet forth the propriety of cultivating a good underſtanding with him, he tells the ſecretary, that the dauphin might make a return for ſome dogs which the prince had ſent him, by a ſuit of armour well gilt and enamelled, together with piſtols and a ſword of the ſame kind; alſo two horſes, one of them a barb.—This year alſo the prince waited on his uncle the king of Denmark, who had come to England on a viſit to King James; and this monarch was ſo much pleaſed with his company, that he preſented him at parting with his vice-admiral and beſt fighting ſhip, valued at no leſs than 2500 l. alſo with a rapier and hanger, valued at 2000 marks. The ſtates of Holland were equally ready to ſhow their attachment. On the 25th of Auguſt this year they ſent a letter to the prince in French, accompanied with the preſent of a ſet of table-linen, which they thought, as being the produce of their own country, would be agreeable to him; and they requeſted his love and favour towards their ſtate: in return for which they promiſed to be always ready to ſhow their regard for him, and to do him all poſſible ſervice; as the ambaſſador himſelf was ordered more particularly to declare. About this time the prince himſelf wrote a letter to Henry IV. acknowledging the kindneſs which his majeſty had ſhown him for ſeveral years, and confirmed of late by the latter offering him under his own royal hand his friendſhip and that of the dauphin.

While James was this year employed in hunting, the French ambaſſador, who had been obliged to quit London on account of the plague, took frequent opportunities of waiting upon his highneſs, as did alſo the Spaniſh ambaſſador, whoſe oſtenſible reaſon was to inform him about ſome horſes which were to be ſent him from Spain. The prince's partiality towards France, however, was ſo evident, that the French ambaſſador, in a letter dated 31ſt October 1606, mentions that "as far as he could diſcover, his highneſs's inclination was entirely towards France, and that it would be wrong to neglect a prince who promiſed ſuch great things. None of his pleaſures (continued he) ſavour the leaſt of a child. He is a particular lover of horſes and whatever belongs to them: but is not fond of hunting; and when he goes to it, it is rather for the pleaſure of galloping than that which the dogs give him. He plays willingly enough at tennis, and another Scottiſh diverſion very like mall; but this always with perſons elder than himſelf, as if he deſpiſed thoſe of his own age. He ſtudies two hours a-day, and employs the reſt of his time in toſſing the pike, or leaping, or ſhooting with the bow, or throwing the bar, or vaulting, or ſome other exerciſe of the kind, and he is never idle. He ſhows himſelf likewiſe very good-natured to his dependents, ſupports their intereſt againſt any perſons whatever, and puſhes whatever he undertakes for them or others with ſuch zeal as gives ſucceſs to it. For, beſides his exerting his whole ſtrength to compaſs what he deſires, he is already feared by thoſe who have the management of affairs, and eſpecially by the earl of Saliſbury, who appears to be greatly apprehenſive of the prince's aſcendant: as the prince, on the other hand, ſhows little eſteem for his lordſhip." In this letter the ambaſſador further goes on to remark, that ſome of the prince's attendants had formerly been made to expect penſions from France; and he was of opinion that they ought to be gratified on account of the intereſt they had with the prince. He adds, that the queen had leſs affection for Prince Henry than for his brother the duke of York, afterwards Charles I.; which the prince ſeemed to have diſcovered, and ſometimes uſed expreſſions to that purpoſe; that the king alſo ſeemed to be jealous of his ſon's accompliſhments, and to be diſpleaſed with the quick progreſs he made.

In 1607 the prince received the arms and armour which Henry IV. ſent him as a preſent; and theſe being accompanied with a letter, the prince returned an anſwer by a Mr Douglaſs; who was introduced to the king of France by the ambaſſador Sir George Carew. His majeſty, contrary to cuſtom, opened the prince's letter immediately; and was ſo much ſurpriſed at the beauty of the character, that he could not be ſatisfied that it was the prince's hand until he compared the ſignature with the reſt of the writing. In his letter to the Britiſh court on this occaſion, the ambaſſador ſets forth in ſtrong terms the affection expreſſed by the French monarch for the prince; “accounting of him as of his own ſon, as he hoped that his good brother of Great Britain would do the like of the dauphin.” The French ambaſſador alſo gave a character of his highneſs ſimilar to that already mentioned; remarking, that the prince had great accompliſhments and courage; would ſoon make himſelf talked of, and poſſibly give jealouſy to his father, and apprehenſions to thoſe who had the greateſt aſcendant at court.” With regard to the penſions to his attendants, he was at firſt of opinion that they ought to be granted; but afterwards altered his mind, perceiving that there was little probability of the prince being influenced by any of his attendants, as he was much more inclined to be guided by his own judgment than by the ſuggeſtions of others —In the month of July this year the Dutch ambaſſadors came recommended to Price Henry by the States, who wrote to him that they had ordered their ambaſſadors to kiſs his highneſs's hands on their part, and deſired him to continue his friendſhip to their republic, and to allow their ambaſſadors a favourable audience, and the ſame credit as to themſelves.

All this attention paid him by foreign powers, all his attention to his own improvements in learning and the military art, and all the temptations which we cannot but ſuppoſe a youth in his exalted ſtation to have been expoſed to, ſeem never to have ſhaken the mind of this magnanimous prince in the leaſt, or to have at any time made him deviate from the ſtrict line of propriety. We have already mentioned his attachment to the proteſtant religion; and this appears not to have been grounded upon any prejudice or opinion inculcated upon his infant mind by thoſe who had the care of him, but from a thorough conviction of the truth of the principles which he profeſſed. On the diſcovery of the gunpowder-plot, he was ſo impreſſed with gratitude towards the Supreme Being, that he never afterwards omitted being preſent at the ſermon preached on the occaſion. In his 14th year the prince ſhowed himſelf capable of diſtinguiſhing the merit of religious diſcourſes, and paid particular regard to ſuch divines as were moſt remarkable for their learning and abilities. Among others, he honoured with his attention the learned and eloquent Mr Joſeph Hall, then rector of Halſtead in Suffolk, afterwards dean of Worceſter, and ſucceſſively biſhop of Exeter and Norwich. His highneſs was ſo much pleaſed with a book of Meditations publiſhed by that divine, that he preſſed him to preach before him; and having heard two of his ſermons, he engaged him as one of his chaplains; inviting him afterwards to ſtay conſtantly at his court, while the other chaplains waited only in their turns; promiſing, moreover, to obtain from the king ſuch preferments as ſhould fully ſatisfy him. Mr Hall, however, from a reluctance to leave his new patron Lord Denny afterwards earl of Norwich, did not accept of theſe honourable and advantageous propoſals.

In his family the prince took the utmoſt care to preſerve decency and regularity. He ordered boxes to be kept at his three houſes of St James's, Richmond, and Nonſuch, for the money required of thoſe who were heard to ſwear: the fines levied on ſuch offenders being given to the poor. He had, indeed, a particular averſion to the vice of ſwearing and profanation of the name of God. When at play he never was heard to do ſo; and on being aſked why he did not ſwear at play as well as others? he anſwered, that he knew no game worthy of an oath. The ſame anſwer he is ſaid to have given at a hunting-match. The ſtag, almoſt quite ſpent, croſſed a road where a butcher was paſſing with his dog. The ſtag was inſtantly killed by the dog; at which the huntſmen were greatly offended, and endeavoured to irritate the prince againſt the butcher: but his highneſs anſwered coolly, “What if the butcher's dog killed the ſtag, what could the butcher help it? They replied, that if his father had been ſo ſerved, he would have ſworn ſo that no man could have endured. “Away,” cried the prince, “all the pleaſure in the world is not worth an oath.”

The regard, which Prince Henry had for religion was manifeſt from his attachment to thoſe who behaved themſelves in a religious and virtuous manner. Among theſe was Sir John Harrington, whoſe father had been knighted by queen Elizabeth, and created by King James a baron of England in 1603 by the title of Lord Harrington of Exton in Rutland. He was entruſted with the care of the Princeſs Elizabeth after her marriage with the elector palatine, whom he attended to Heydelberg in 1613, and died at Worms on the 24th of Auguſt following. His ſon, who in the year 1604 had been created knight of the Bath, was as ſoon as he came to the years of diſcretion remarkable for his piety; inſomuch that he is ſaid to have kept an exact diary of his life, and to have examined himſelf every week as to the progreſs he had made in piety and virtue, and what faults he had committed during that time. He was affable and courteous to all, and remarkable for his humanity to thoſe in diſtreſs; all which good qualities ſo endeared him to the prince, that he entered into as ſtrict a friendſhip with him as the diſproportion between their ſtations would allow. There are ſtill ſeveral letters extant which paſſed between them, chiefly upon claſſical ſubjects. This worthy and accompliſhed nobleman died in February 1614.

In his friendſhip Prince Henry appears to have been very ſincere, and inviolably attached to thoſe whom he once patroniſed. He had a great regard for the unfortunate Lady Arabella Stewart, ſiſter of Henry Lord

Darnley, the king's father; and there is ſtill extant a letter from this lady to the prince in return for ſome kindneſs he had beſtowed on a kinſman of hers at her recommendation. He expreſſed much compaſſion for her misfortunes; ſhe having excited the king's jealouſy on account of her marriage with Mr William Seymour, afterwards earl and marquis of Hertford, and reſtored in 1660 to the dukedom of Somerſet. But on her attempting to eſcape from the houſe in Highgate where ſhe was confined, and to go abroad with her huſband, his highneſs expreſſed ſome reſentment againſt her; though in all probability his apprehenſions as well as thoſe of the king, were ill-founded.

As early as the year 1605, the prince, though then only in his 11th year, manifeſted his gratitude and attachment to thoſe who had ſerved him, in the inſtance of his tutor Mr. Newton already mentioned. That gentleman had been promiſed by his majeſty the deanery of Durham upon the demiſe of the archbiſhop of York. On this promiſe Mr Newton had relied for two years; and as ſoon as the prelate died, his highneſs took care to put the king in mind of his promiſe; in conſequence of which, Mr Newton was inſtalled in his office on the 27th of September 1606.

Mr Pett, the gentleman who firſt inſtructed the prince in naval affairs, having been involved with many others in an inquiry concerning their conduct in their reſpective employments in the royal navy, the prince ſhowed a laudable deſire of protecting their innocence. The inquiry was ſet on foot by the earl of Northampton, lord privy ſeal and warden of the cinque ports, who had received a commiſſion from the king for the purpoſe. It was carried on by his agents, however, with ſuch violence and malice, as not only occaſioned great trouble and expence to the parties concerned, but almoſt ruined the navy, beſides augmenting his majeſty's expences much more than formerly. Mr Pett's trial began on the 28th of April 1609; at which time the reports being very favourable to him, the king determined to examine into the ſtate of the matter himſelf. For this purpoſe he went to Woolwich on the 8th of May, attended by the prince; and appointed Sir Thomas Chaloner, his highneſs's governor, and Mr Henry Briggs, then profeſſor of geometry in Greſham college, to decide the controverſy which was then agitated about the proportion of the ſhips. The meaſurers declared in favour of Mr Pett; on which the prince exclaimed, "Where be now thoſe perjured fellows, that dare thus to abuſe his majeſty with falſe informations? Do they not worthily deſerve hanging?" During the whole time he ſtood near Mr Pett to encourage him; and when the king declared himſelf ſatisfied of his innocence, the prince took him up from his knees, expreſſing his own joy for the ſatisfaction which his father had received that day; proteſting that he would not only countenance Mr Pett for the future, but provide for him and his family as long as he lived.

The courage, intrepid diſpoſition, and martial turn of this prince, were manifeſt from his infancy. It is related of Alexander the Great, that at a very early period of his life he ſhowed more ſkill than all his father's grooms in the breaking of his favourite horſe Bucephalus. An anecdote ſomewhat ſimilar is recorded of prince Henry. He was hardly ten years of age, when he mounted a very high ſpirited horſe, in ſpite of the remonſtrances of his attendants; ſpurred the animal to a full gallop; and having thoroughly wearied him, brought him back at a gentle pace, aſking his ſervants at his return, "How long ſhall I continue in your opinion to be a child?" From the very firſt time that he embarked on board the ſmall veſſel formerly mentioned, he continued to pay the utmoſt attention to naval affairs. In Auguſt 1607, he viſited the royal navy at Woolwich, where he was received by Mr Pett, and conducted aboard the Royal Anne, where he had 31 large pieces of ordnance ready to be fired. This was done unexpectedly as ſoon as the prince reached the poop; at which he expreſſed great ſatisfaction. After viſiting the dock-yard, and ſurveying what was done of a ſhip then building for himſelf, he went aſhore, and having partaken of an entertainment prepared for him by Mr Pett, he was by him conducted to the mount, where the ordnance were again charged and ready to be placed for firing. The prince inſiſted upon an immediate diſcharge, but ſuffered himſelf to be perſuaded againſt it by Mr Pett's repreſentation of the danger of firing ſo many ordnance loaded with ſhot while his highneſs ſtood cloſe by; on a ſignal given by him, however, by holding up his handkerchief, after he had removed to a proper diſtance with his barge, the ordnance were diſcharged as he had deſired. In his 16th year he paid ſeveral viſits to Woolwich, in order to ſee the abovementioned ſhip which was building for himſelf. When finiſhed, it was the largeſt that had ever been ſeen in England: the keel being 114 feet in length, and the croſs beam 44 feet, carrying 64 pieces of great ordnance; the burden about 1400 ton; and the whole curiouſly ornamented with carving and gilding. His highneſs having received this ſhip in a preſent from his majeſty, went to ſee it launched on the 24th of September 1609. The narrowneſs of the dock, however, having prevented its being done at that time, the prince, who ſtaid behind the reſt of the company in order to prepare for the ceremony next morning, returned by three o'clock through a ſtorm of rain, thunder, and lightning; and ſtanding on the poop while the ſhip was launched, gave it the name of the *Prince Royal.*

In 1611 his highneſs made a private viſit to Chatham, where he firſt went on board the Prince Royal, and afterwards from ſhip to ſhip informing himſelf particularly of every thing of moment relating to the ſtate of all the different ſhips, and even pinnaces lying there at that time. Next day he went by water up to Stroud; where, contrary to all the remonſtrances of his attendants, he cauſed the ordnance to be ſhot over his barge. From Stroud he went to Graveſend, where the magiſtrates received him with a diſcharge of all their ſmall-arms and the ordnance of the blockhouſes.

About the middle of January 1612, Prince Henry ordered all his majeſty's maſter-ſhipwrights and builders to attend him to conſider of a propoſition concerning the building of ſhips in Ireland made by a Mr Burrel. Some of his propoſitions were, that he ſhould build any ſhip from 100 to 600 ton, with two decks and an half, at the rate of five pounds per ton; that he would build any ſhip from 600 to 1000 ton with three whole decks, at the rate of ſeven pounds per ton; that he ſhould build a ſhip of 600 ton within a certain time, &c. Mr. Pett was employed to ſee that this contract was fulfilled on the part of Mr Burrel. Among the prince's papers, a liſt of the royal navy was found after his death, with an account of all the expences of fitting out, manning, &c. which muſt now be accounted a valuable addition to the naval hiſtory of thoſe times. His paſſion for naval affairs naturally led him to a deſire of making geographical diſcoveries; of which, however, only two inſtances have reached our times. One was in 1607, when he received from Mr Tindal his gunner, who had been employed by the Virginia company, a draught of James's river in that country, with a letter dated 22d June the ſame year. In this letter Mr Tindal remarks, that his fellow-adventurers had diſcovered that river; and that no Chriſtian had ever been there before; that they were ſafely arrived and ſettled; that they found the country very fruitful; and that they had taken real and public poſſeſſion in the name and to the uſe of the king his highneſs's father. The other inſtance was in the year 1612, the ſame in which he died, when he employed Mr Thomas Button, an eminent mariner, to go in queſt of a north-weſt paſſage. Mr Button accordingly ſet ſail with two ſhips named the *Reſolution* and *Diſcovery*; the ſame deſignations with thoſe in which the late Captain Cook made his laſt voyage. Both of them were victualed for 18 months; but wintering in theſe northern regions, they did not return till after the prince's deceaſe, ſo that Captain Button was never ſent on another voyage: nevertheleſs, he returned fully convinced of the exiſtence of ſuch a paſſage; and even told the celebrated profeſſor Briggs of Greſham college, that he had convinced the king of his opinion.

The martial diſpoſition of the prince, which was conſpicuous on all occaſions, eminently diſplayed itſelf on the occaſion of his being inveſted in the principality of Wales and duchy of Cornwall, which took place in the year 1610. Previous to this ceromony, he, under the name and character of *Mæliades* lord of the iſles, cauſed a challenge to be given, in the romantic ſtyle of thoſe times, to all the knights in Great-Britain. The challenge, according to cuſtom, was accepted; and on the appointed day, the prince, aſſiſted only by the duke of Lenox, the earls of Arundel and Southampton, Lord Hay, Sir Thomas Somerſet, and Sir Richard Preſton who inſtructed his highneſs in arms, maintained the combat againſt 56 earls, barons, knights, and eſquires. Prince Henry himſelf gave and received 32 puſhes of the pike, and about 360 ſtrokes of ſwords, performing his part very gracefully, and to the admiration of all who ſaw him, he being not yet 16 years of age. Prizes were beſtowed upon the earl of Montgomery,, Mr Thomas Darry, and Sir Robert Gordon, for their behaviour at this combat. The ceremony of inſtallation was performed on the 4th of June 1610, at which time every kind of magnificence was diſplayed that could be deviſed. Among other pageants uſed on this occaſion was that of Neptune riding on a dolphin and making ſpeeches to the prince; alſo of a ſea-goddeſs upon a whale. After the ceremony the prince took his place on the left hand of his majeſty; ſitting there in his royal robes, with the crown on his head, the rod in one hand, and in the other the patent creating him Prince of Wales and duke of Cornwall. A public act was then read, teſtifying that he had been declared prince of Great Britain and Wales. He was afterwards ſerved at table with a magnificence not unworthy of royalty itſelf; the whole concluding with a grand maſquerade and tournament.

In one inſtance, the extreme deſire which prince Henry had in being inſtructed in military affairs, carried him beyond thoſe bounds which European nations have preſcribed to one another. In 1607 the prince de Joinville, brother to the duke of Guiſe, came to England, having been obliged to leave France in conſequence of his having made love to the counteſs de Moret the king's miſtreſs. After having been for a few weeks magnificently entertained at court, he departed for France in the beginning of June. The prince took an opportunity of ſending to Calais in the train of the prince an engineer in his own ſervice, who took the opportunity of examining all the fortifications of the town, particularly thoſe of the Rix-banc. This was diſcovered by the French ambaſſador, who immediately gave notice of it to the court, but excuſed the prince, as ſuppoſing that what he had done was more out of curioſity than any thing elſe; and the court ſeemed to be of the ſame opinion, as no notice was ever taken of the affair, nor was the friendſhip betwixt king Henry and the prince in the ſmalleſt degree interrupted. The martial diſpoſition of his highneſs was greatly encouraged by ſome people in the military line, who put into his hands a paper entitled "Propoſitions for War and Peace." Notwithſtanding this title, however, the aim of the author was evidently to promote war rather than peace; and for this the following arguments were uſed. 1. Neceſſity; for the preſervation of our own peace, the venting of factious ſpirits, and inſtructing the people in arms. 2. The benefits to be derived from the ſpoils of the enemy, an augmentation of revenue from the conquered countries, &c. This was anſwered by Sir Robert Cotton in the following manner. 1. That our wiſeſt princes had always been inclined to peace. 2. That foreign expeditions were the cauſes of invaſions from abroad and rebellions at home, endleſs taxations, vaſſalage, and danger to the ſtate from the extent of territory, &c. It does not appear, however, that the prince was at all moved by theſe pacific arguments: on the contrary, his favourite diverſions were tilting, charging on horſeback with piſtols, &c. He delighted in converſing with people of ſkill and experience in war concerning every part of their profeſſion; cauſed new pieces of ordnance to be made, with which he learned to ſhoot at a mark; and was ſo careful to furniſh himſelf with a breed of good horſes, that no prince in Europe could boaſt of a ſuperiority in this reſpect. He was ſolicited by Sir Edward Conway to direct his attention to the affairs of the continent, where Sigiſmund III. of Poland threatened, in conjunction with the king of Denmark, to attack Guſtavus Adolphus the young king of Sweden; but the death of the prince, which happened this year, prevented all interference of this kind.

To his other virtues Prince Henry added thoſe of frugality without avarice, and generoſity without extravagance. As early as the year 1605 he began to ſhow an attention to his intereſt as duke of Cornwall, and to take proper meaſures for ſecuring his revenues there. In 1610 he ſettled and appointed the officers of his houſhold, making his choice with the greateſt prudence, and giving orders for the management and regulation of his affairs with all the wiſdom and gravity of an old counſellor. Some lands were now allotted to him for his revenues; and inſtead of diminiſhing his income during the ſhort time he was in poſſeſſion of them, they were found at his death to be ſome thouſands of pounds better than when he obtained them. At this time he ſhowed much reluctance to gratify any of his ſervants except by promiſes, as not thinking himſelf yet authoriſed to give any thing away: but a ſhort time before his death, he conferred penſions on ſome of them; and there is no reaſon to doubt, that had his life been prolonged he would have rewarded them all according to their merit.

Though Prince Henry never interfered much in public buſineſs, yet in any little tranſactions he had of this kind, he always diſplayed great firmneſs and reſolution, as well as abſolute propriety of conduct. In a letter from Sir Alexander Seton, earl of Dunfermling, he is commended for the firmneſs and reſolution with which he repelled the calumnies of ſome who "had raſhly, and with the higheſt intemperance of tongue, endeavoured to wound the Scottiſh nation." By this he alluded to ſome very groſs and ſcurrilous invectives thrown out againſt the whole body of the Scots by Sir Chriſtopher Pigot, in a debate in the houſe of commons on an union between the two kingdoms. This gentleman declared his aſtoniſhment at the propoſal of uniting a good and fertile country to one poor, barren, and in a manner diſgraced by nature; and for aſſociating rich, frank, and honeſt men, with ſuch as were beggars, proud, and generally traitors and rebels to their kings; with many other ſhameful expreſſions of the ſame kind. His majeſty was highly offended with the whole council; and Sir Chriſtopher, after being obliged in parliament to retract his words, was expelled the houſe and impriſoned; in conſequence of which, the king was addreſſed by the ſtates of Scotland, who thanked him for the zeal he had manifeſted for the honour of the country. In another inſtance, where the prince wiſhed Mr Fullerton, a Scotſman, to ſuperſede Sir Robert Car, one of the attendants of his brother the duke of York, contrary to the inclination of the king and earl of Saliſbury, his highneſs carried his point by perſuading Sir Robert of himſelf to give up the place in queſtion.

Under this year, 1611, the elegant Latin hiſtorian of Great Britain from 1572 to 1628, Robert Johnſton, places a ſtory, which, though unſupported by any authority but his own, and improbable in itſelf, muſt not be omitted here. The prince, according to this writer, requeſted the king that he might be appointed to preſide in the council. This demand was ſeconded by the king's favourite Car, Viſcount Rocheſter, who urged his majeſty to lay his ſon's petition before the council. But the earl of Saliſbury, jealous of the growing power of Rocheſter, and a thorough maſter of artifice and diſſimulation, uſed all his efforts to defeat whatever meaſures were propoſed by his rival: and being aſked ſoon after his opinion upon this point, whether it was for the public intereſt that the prince ſhould preſide in the council? anſwered, that he thought it dangerous to divide the government, and to inveſt the ſon with the authority of the father. Many others of the privy council having delivered their opinions on the ſame queſtion, that of the earl of Saliſbury was adopted by the majority. But his lordſhip ſoon took an opportunity, in a ſecret conference with the prince, to lament his own ſituation, and to perſuade his highneſs that Lord Rocheſter had the only influence in the palace, and privately counteracted all his deſigns. The prince, on his part, reſented the denial of his requeſt, and his excluſion from public buſineſs. It was not long before Lord Rocheſter diſcovered the earl of Saliſbury's practice againſt him with the prince; to whom he therefore went to clear himſelf. But his highneſs turned from him with great indignation, and would not hear his juſtification. The queen likewiſe, highly diſpleaſed with the viſcount, refuſed to ſee him, and ſought all means of leſſening his power. This forwardneſs imputed to the prince by the hiſtorian, in endeavouring to intrude himſelf into the management of public affairs, is not (as Dr Birch remarks) at all ſuitable to the character of his highneſs, or to any other accounts which we have of him; nor ought it to be believed upon the credit of a writer who cites no authority for it, nor indeed for ſcarce any other aſſertions in his hiſtory, how extraordinary ſoever they appear to be, and who frequently ventures to enlarge upon ſubjects which it was impoſſible for him to have known. However, it is not much to be doubted, that the prince had no great eſteem for Lord Rocheſter, whoſe riſe to the power of a favourite and a miniſter he ſo much diſliked, if we may believe a ſatirical writer of Memoirs*, that he was reported either to have ſtruck his lordſhip on the back with a racket, or very hardly forborne it. And another hiſtorian, not much leſs ſatirical, Arthur Wilſon†, mentions the bickerings betwixt the prince and the viſcount; and that Sir James Elphinſton obſerving his highneſs one day to be diſcontented with the viſcount, offered to kill him; for which the prince reproved him, and ſaid that if there were cauſe he would do it himſelf. But to wave ſuch very ſuſpicious authorities, it will be ſufficient, in order to judge of his highneſs's opinion of the viſcount, and his adminiſtration at the very height of it, to hear what himſelf ſays in a letter to Sir Thomas Edmondes of the 10th of September 1612: "As matters go now here, I will deal in no buſineſſes of importance for ſome reſpects."

It is not to be ſuppoſed but that the marriage of a prince ſo accompliſhed and ſo much admired would engage the attention of the public. This was indeed the caſe. The queen, who favoured the intereſt of Spain, propoſed a match with the infanta, and the king of Spain himſelf ſeemed to be inclined to the match. In 1611 a propoſal was made for a double marriage betwixt the prince of Wales and the eldeſt daughter of the houſe of Savoy, and between the prince of Savoy and the Lady Elizabeth; but theſe overtures were very coolly received, being generally diſagreeable to the nation. Sir Walter Raleigh, at that time priſoner in the Tower, wrote two excellent treatiſes againſt theſe matches; in one of which he ſtyles the prince *The moſt excellent and hopeful*, as he does alſo in the intro-

* Francis Oſborne's *Traditional Memoirs on King James*, ſect. 38. p. 530.

† *Life and Reign of K. James I.*

introduction to his Obſervations on the royal navy and ſea-ſervice. About the year 1612, his marriage became an object of general attention. In this affair the king ſeems to have inclined to match his ſon with the princeſs who promiſed to bring the largeſt dowry; the nation at large to have been influenced by motives of religion; and the prince himſelf to have remained entirely paſſive, and to have been willing to beſtow his perſon with the moſt perfect indifference on whatſoever princeſs ſhould be choſen for him. This appears from a letter to the king dated 5th October 1612, in which he conſiders the match with the ſecond princeſs of France as in a manner concluded. Propoſals had indeed been made of ſending her over to England for her education, ſhe being only nine years of age at that time; but Villeroy the French miniſter was of opinion, that this ought to be delayed for a year longer. The reaſons aſſigned by the prince for wiſhing her coming to England at that time were merely political: 1. Becauſe the French court, by having the princeſs in their power, might alter her mind as they pleaſed; 2. That there would thus be a greater likelihood of converting her to the proteſtant religion; and, 3. That his majeſty's credit would be better preſerved when both daughters (the eldeſt being promiſed to the prince of Spain) ſhould be delivered at the ſame time, though the concluſion of the one marriage might be much later than of the other. With regard to the exerciſe of her religion, the prince expreſſed himſelf rather in ſevere terms, wiſhing his majeſty only to allow her to uſe it in “her moſt private and ſecret chamber.” He then argues with the moſt philoſophic indifference of the propriety of a match with the French princeſs rather than with one of the houſe of Savoy: concluding at laſt in the following words; “If I have incurred in the ſame error that I did laſt by the indifference of my opinion, I humbly crave pardon of your majeſty, holding it fitter for your majeſty to reſolve what courſe is moſt convenient to be taken by the rules of the ſtate, than for me who am ſo little acquainted with ſubjects of that nature: and beſides, your majeſty may think, that my part to play, which is to be in love with any of them, is not yet at hand.” On the whole, it appeared, that there never was any real deſign in the king or prince to bring this matter to a concluſion; and that the propoſal had been made only with a view to break off the match of the eldeſt daughter with the prince of Spain, which could not now be done.

Prince Henry, notwithſtanding his indifference in matrimonial matters, applied himſelf with the utmoſt aſſiduity to his former employments and exerciſes, the continual fatigue of which was thought to impair his health. In the 19th year of his age his conſtitution ſeemed to undergo a remarkable change: he began to appear pale and thin, and to be more retired and ſerious than uſual. He complained now and then of a giddineſs and heavy pain in his forehead, which obliged him to ſtroke up his brow before he put on his hat: he frequently bled at the noſe, which gave great relief, though the diſcharge ſtopped ſome time before his death. Theſe forebodings of a dangerous malady were totally neglected both by himſelf and his attendants, even after he began to be ſeized at intervals with fainting fits. Notwithſtanding theſe alarming ſymptoms, he continued his uſual employments. On the arrival of Count de Naſſau in England, he waited upon him as though nothing had been the matter; and when the ſubject of the princeſs Elizabeth's marriage came to be canvaſſed, he intereſted himſelf deeply in the affair, and never deſiſted till the match with the elector palatine was concluded. In the beginning of June 1612, the prince went to Richmond, where he continued till the progreſs; and notwithſtanding the complaints abovementioned, he now took the opportunity of the neighbourhood of the Thames to learn to ſwim. This practice in an evening, and after ſupper, was diſcommended by ſeveral of his attendants; and was ſuppoſed to have ſtopped the bleeding at the noſe, from which he had experienced ſuch ſalutary effects. He could not, however, be prevailed upon to diſcontinue the practice; and took likewiſe great pleaſure in walking by the river-ſide in moon-light to hear the ſound and echo of the trumpets, by which he was undoubtedly too much expoſed to the evening dews. Through impatience to meet the king his father, he rode 60 miles in one day; and having reſted himſelf during the night, he rode the next day 36 miles to Belvoir Caſtle, where he met the king at the time appointed. During the heat of the ſeaſon alſo he made ſeveral other fatiguing journeys, which muſt undoubtedly have contributed to impair his health. At the concluſion of the progreſs, he gave a grand entertainment to the court from Wedneſday till Sunday evening, when the king and queen with the principal nobility attended at ſupper. Next day he haſtened to his houſe at Richmond, where he expected the elector palatine, and began to give orders for his reception, alſo to take meaſures for rewarding his ſervants. To ſome of thoſe he gave penſions, and promiſed to gratify the reſt as ſoon as poſſible. From this time, however, his health daily declined. His countenance became more pale, and his body more emaciated: he complained now and then of drowſineſs; which frequently made him aſk his attendants concerning the nature and cure of an epidemic fever, probably of the putrid kind, which at that time prevailed in England, and was ſuppoſed to have been brought thither from Hungary. He now began frequently to ſigh, as is uſual for perſons afflicted with diſorders of that kind. The malady increaſed in the begining of October, though he uſed his utmoſt endeavours to conceal it, and occupied himſelf as uſual; only that now, inſtead of riſing early in the morning as before, he would commonly keep his bed till nine. On the 10th of that month he had two ſlight fits of an ague, which obliged him to keep his chamber; and on the 13th his diſtemper ſeemed to be augmented by a violent diarrhœa, which, however, gave ſo much relief next day, that he inſiſted upon being removed from Richmond to St James's, in order to receive the elector palatine. On his arrival there, ſome of his attendants began to be alarmed by the ſigns of ſickneſs which appeared upon him, though he himſelf made no complaint, and even allowed his phyſician to go to his own houſe. The elector arrived on the 16th, and the prince waited upon him at Whitehall; but his diſeaſe had now gained ſo much ground, that his temper underwent a very conſiderable alteration, and he became peeviſh and diſcontented with almoſt every thing:

nevertheleſs he ſtill continued to give orders about what related to the ceremony of his ſiſter's marriage; and kept company as much as he could with the elector and the count de Naſſau, with whoſe converſation he ſeemed to be particularly delighted. So great was his activity even at this time, that he played a match at tennis on the 24th of October. At this time he expoſed himſelf in his ſhirt, ſeemingly without any inconvenience; but at night he complained of a greater degree of laſſitude than uſual, and of a pain in his head. Next day, being Sunday, he attended divine ſervice and heard two ſermons; after which he dined with his majeſty, ſeemingly with a good appetite, but the paleneſs and ghaſtly appearance of his countenance was much remarked. About three in the afternoon he was obliged to yield to the violence of his diſtemper; being ſeized with a great faintneſs, ſhivering, and head-ach, with other ſymptoms of a fever, which from that time never left him. Several phyſicians were called; but they differed much in their opinions, if indeed any agreement amongſt them, conſidering the ſtate of medicine at that time, could have been of ſervice. On the firſt of November he was blooded; an operation which Dr Butler one of his phyſicians had hitherto oppoſed, but now conſented to in compliance with his fellows. The impropriety of it was manifeſt by the thin and diſſolved ſtate of the blood which was taken away, and ſtill more by his becoming much worſe next day. As at that time the Peruvian bark, the great antidote in putrid diſeaſes, was unknown, and no proper methods of treatment ſeem to have been employed, it is not to be wondered that he ſunk under the diſeaſe. Among other abſurd remedies uſed on this occaſion was "a cock cloven by the back, and applied to the ſoles of his feet." He expired on the 6th of November 1612, at the age of 18 years 8 months and 17 days. On opening his body, the lungs were found black, ſpotted, and full of corrupted matter; the diaphragm was alſo blackened in many places; the blood veſſels in the hinder part of the head were diſtended with blood, and the ventricles full of water: the liver was in ſome places pale and lead-coloured; the gall-bladder deſtitute of bile, and diſtended with wind; and the ſpleen in many places unnaturally black. His funeral was not ſolemnized till the 7th of December following. Many funeral ſermons were publiſhed in honour of him, and the two univerſities publiſhed collections of verſes on this occaſion. The moſt eminent poets of that age alſo exerted themſelves in honour of the deceaſed prince; particularly Donne, Brown, Chapman, Drummond of Hawthornden, Dominic Baudius of Leyden, &c.

His highneſs's family continued together at St James's till the end of December 1612, when it was diſſolved; and upon the day of their diſſolution, Mr Joſeph Hall, his chaplain, preached to them a moſt pathetic farewell ſermon, on Revel. xxi. 3. In this he ſpeaks of his deceaſed maſter in the higheſt terms of commendation, as the glory of the nation, ornament of mankind, hope of poſterity, &c.: and that he, who was compounded of all lovelineſs, had infuſed an harmony into his whole family, which was "the moſt loving and entire fellowſhip that ever met in the court of any prince." The exhortation with which the preacher concludes, is; "Go in peace, and live as thoſe that have loſt ſuch a maſter, and as thoſe that ſerve a Maſter whom they cannot loſe."

Prince Henry was of a comely ſtature, about five feet eight inches; of a ſtrong, ſtraight, well-made body, with ſomewhat broad ſhoulders and a ſmall waiſt; of an amiable and majeſtic countenance: his hair of an auburn colour: he was long-faced, and had a broad forehead, a piercing eye, a moſt gracious ſmile, with a terrible frown. He was courteous, loving, and affable; naturally modeſt, and even ſhame-faced; moſt patient, which he ſhowed both in life and death; ſlow to anger, ſo that even when he was offended he would govern it and reſtrain himſelf to ſilence. He was merciful to offenders, after a little puniſhment to make them ſenſible of their faults. His ſentiments of piety ſtrong and habitual; and his zeal for the intereſts of religion was ſuch, that he would, if he had lived, have uſed his endeavours for reconciling the diviſions among its profeſſors. He uſually retired three times a-day for his private devotions, and was ſcarce once a month abſent from the public prayers, where his behaviour was highly decent and exemplary, and his attention to the preacher the moſt fixed imaginable. He had the greateſt eſteem for all divines whoſe characters and conduct correſponded with their profeſſion; but could not conceal his indignation againſt ſuch as acted inconſiſtently with it, and he above all things abhorred flattery and vain-glory in them. He had a thorough deteſtation for popery, though he treated thoſe of that religion with great courteſy; ſhowing, that his hatred was not levelled at their perſons, but their opinions. And he was ſo immoveable in his attachment to the proteſtant religion, that not long before his death, as Sir Charles Cornwallis † aſſures us, he made a ſolemn proteſtation that he would never join in marriage with one of a different faith.

† *Diſcourſe of the moſt illuſtrious Prince Henry, by Sir Charles Cornwallis*, printed in *the Harleian Miſcellany*, vol. iv. p. 320.

The prince was ſo exact in all the duties of filial piety, and bore ſo true a reverence and reſpect for the king his father, that though ſometimes, out of his own inclination, or by the excitement of others, he moved his majeſty in ſome things relating to the public, or his own particular intereſts, or thoſe of others; yet upon the leaſt word, look, or ſign given him of his majeſty's diſapprobation, he would inſtantly deſiſt from purſuing the point, and return either with ſatisfaction upon finding it diſagreeable to the king, or with ſuch a reſolved patience that he neither in word or action gave ſo much as any appearance of being diſpleaſed or diſcontented. He adhered ſtrictly to juſtice on all occaſions; and never ſuffered himſelf to determine raſhly, or till after a due examination of both parties. This love of juſtice ſhowed itſelf very early by favouring and rewarding thoſe among his pages, and other young gentlemen placed about him, who, by men of great judgment, were thought to be of the beſt behaviour and moſt merit. And when he was but a little above five years of age, and a ſon of the earl of Mar, ſomewhat younger than himſelf, falling out with one of his hígneſs's pages, did him ſome wrong, the prince reproved him for it, ſaying, "I love you, becauſe you are my lord's ſon, and my couſin: but if you be not better conditioned, I will love ſuch a one better:" naming the child who had complained of him. He was of ſingular in-

integrity, and hated flattery and diſſimulation; the latter of which he eſteemed a baſe quality, eſpecially in a prince; nor could he ever conſtrain himſelf to treat thoſe kindly who did not deſerve his love. A nobleman in the higheſt favour with the king had written to him, by ſpecial command of his majeſty, a letter, wherein he recommended to his highneſs a matter of very great conſequence, to be inſtantly anſwered; and in his ſubſcription had uſed theſe words, "Yours before all the world." His highneſs directed Sir Charles Cornwallis to draw up an anſwer, who, having written it, added ſome words of favour to the nobleman to precede the prince's ſigning. His highneſs having read and conſidered the letter, allowed it entirely without alteration: But with regard to the words of ſubſcription, notwithſtanding the great haſte which the diſpatch required, he ordered it to be new written, and the words objected to by him to be left out; alleging, that he to whom he wrote had dealt with him untruly and unfaithfully, and that his hand ſhould never affirm what his heart did not think. His temperance, except in the article of fruit, was as eminent as his abhorrence of vanity and oſtentation, which began to ſhow themſelves when he was very young. When he was taught to handle the pike, and his maſter inſtructed him both by word and example to uſe a kind of ſtatelineſs in marching and holding of his hand; though he learned all other things, he would not conform himſelf to that affected faſhion: and if ſometimes, upon earneſt intreaty, he offered to uſe it, he would laugh at himſelf, and preſently return to his own more modeſt and decent manner. And though he was a perfect maſter of dancing, he never practiſed it except when he was ſtrongly preſſed to it. The ſame modeſty appeared in whatever he ſaid or did: But it was no impediment to his generous and heroic diſpoſition, which made him perform all his exerciſes beſt before much company and the greateſt perſonages. His clothes were uſually very plain, except on occaſions of public ceremony, or upon receiving foreign ambaſſadors, when he would aſſume a magnificence of dreſs, and an air of majeſty, which immediately after he laid aſide. Having once worn a ſuit of Welch frize for a conſiderable time, and being told that it was too mean for him, and that he ought not to keep even a rich ſuit ſo long; his anſwer was, that he was not aſhamed of his country cloth, and wiſhed that it would laſt for ever.

In quickneſs of apprehenſion and memory few of the ſame age ever went beyond this prince; and fewer ſtill in a right judgment of what he was taught. When he began to have ſome knowledge of the Latin tongue, being deſired to chooſe a motto out of ſeveral ſentences collected by his tutor for his uſe, after reading over many good ones, he pitched upon that of Silius Italicus, *Fax mentis honeſtæ gloria.* And being aſked by the king one day, which were the beſt verſes that he had learned in the firſt book of Virgil's Æneid, he anſwered theſe:

Rex erat Æneas nobis, quo juſtior alter
Nec pietate fuit, nec bello major & armis.

Reading likewiſe another verſe of the ſame poet,

Tros Tyriuſve mihi nullo diſcrimine agetur,

he ſaid he would make uſe of it with this alteration,

Anglus Scotuſve mihi nullo diſcrimine agetur.

Beſides his knowledge of the learned languages, he ſpoke the Italian and French; and had made a conſiderable progreſs in philoſophy, hiſtory, fortification, mathematics, and coſmography; in the two laſt of which he was inſtructed by that excellent mathematician Mr Edward Wright. He loved and endeavoured to do ſomewhat of every thing, and to be excellent in the moſt excellent. He greatly delighted in all rare inventions and arts, and military engines both at land and ſea; in ſhooting and levelling great pieces of ordnance; in the ordering and marſhalling of armies; in building and gardening; in muſic, ſculpture, and painting, in which laſt art he brought over ſeveral works of great maſters from all countries.

He had a juſt opinion of the great abilities of Sir Walter Raleigh; and is reported to have ſaid, that "no king but his father would keep ſuch a bird in a cage." And it is affirmed, that his highneſs, but a few months before his death, obtained the lands and caſtle of Sherburn in Dorſetſhire, the confiſcated eſtate of Sir Walter, with an intention of returning it to him. That eminent writer, ſoldier, and ſtateſman, had a reciprocal regard for the prince, to whom he had deſigned to addreſs a diſcourſe "Of the Art of War by Sea," which his highneſs's death prevented the author from finiſhing. He had likewiſe written to the prince another "Diſcourſe of a Maritimal Voyage, with the paſſages and incidents therein:" But this has never yet appeared in print. He had alſo intended, and, as he expreſſes it, hewn out a ſecond and third volume of his General Hiſtory, which were to have been directed to his highneſs: "but it has pleaſed God (ſays he) to take that glorious prince out of this world, to whom they were directed; whoſe unſpeakable and never-enough lamented loſs hath taught me to ſay with Job, *Verſa eſt in luctum cithara mea, & organum meum in vocem flentium.*"

In the government of his houſhold and management of his revenues, though he was ſo very young, his example deſerved to be imitated by all other princes. He not only gave orders, but ſaw almoſt every thing done himſelf; ſo that there were ſcarce any of his domeſtics whom he did not know by name. And among theſe there was not one even ſuſpected papiſt; his directions being very peremptory for ſetting down the names of all communicants, that he might know if there were any of his family who did abſent themſelves from the communion. His family was large, conſiſting of few leſs than 500, many of them young gentlemen born to great fortunes, in the prime of their years, when their paſſions and appetites were ſtrong, their reaſon weak, and their experience little. But his judgment, the gravity of his princely aſpect, and his own example, were ſufficient reſtraints upon them; his very eye ſerved inſtead of a command; and his looks alone had more effect than the ſharpeſt reprehenſions of other princes. If any diſputes or conteſts aroſe among his ſervants, he would put a ſtop to them at the beginning, by referring them to ſome of his principal officers, whom he thought moſt intelligent in points of that nature, and to underſtand beſt what compenſation was due to the injured, and what reproof to the offender; ſo that in ſo numerous a family there was not ſo much as a blow given, nor any quarrel carried to the leaſt height.

Though he loved plenty and magnificence in his houſe, he reſtrained them within the rules of frugality and moderation, as we have already noticed. By this economy he avoided the neceſſity of being rigid to his tenants, either by raiſing their farms or fines, or ſeeking or taking advantage of forfeitures. Nor was he tempted to make the profit which both law and right afforded him, of ſuch who had in the time of former princes purchaſed lands belonging to his duchy of Cornwall, which could not by law be alienated from it; for he gave them, upon reſuming theſe lands, a reaſonable ſatisfaction. Neither did his economy reſtrain him from being liberal where merit or diſtreſs called for it; at the ſame time he was never known to give, or even promiſe, any thing, but upon mature deliberation. Whatever abuſes were repreſented to him, he immediately redreſſed, to the entire ſatisfaction of the perſons aggrieved. In his removal from one of his houſes to another, and in his attendance on the king on the ſame occaſions, or in progreſſes, he would ſuffer no proviſions or carriages to be taken up for his uſe, without full contentment given to the parties. And he was ſo ſolicitous to prevent any perſon from being prejudiced or annoyed by himſelf or any of his train, that whenever he went out to hawk before harveſt was ended, he would take care that none ſhould paſs thro' the corn; and, to ſet them an example, would himſelf ride rather a furlong about.

His ſpeech was ſlow, and attended with ſome impediment, rather, as it was conceived, by cuſtom and a long imitation of ſome who firſt inſtructed him, than by any defect of nature, as appeared from his having much corrected it by uſing at home amongſt his ſervants, firſt ſhort diſcourſes, and then longer, as he found himſelf enabled to do it. Yet he would often ſay of himſelf, that he had the moſt unſerviceable tongue of any man living.

He had a certain height of mind, and knew well how to keep his diſtance; which indeed he did to all, admitting no near approach either to his power or his ſecrets. He expreſſed himſelf, upon occaſions offered, to love and eſteem moſt ſuch of the nobility as were moſt anciently deſcended, and moſt nobly and honeſtly diſpoſed. He had an entire affection for his brother the duke of York and his ſiſter Elizabeth; though ſometimes, by a kind of rough play with the former, and an appearance of contradicting the latter in what he diſcerned her to deſire, he took a pleaſure in giving them, in their tender years, ſome exerciſe of their patience. A writer † of leſs authority than Sir Charles Cornwallis, from the latter of whom we have theſe particulars, adds, that the prince ſeemed to have more affection for his ſiſter than his brother, whom he would often taunt till he made him weep, telling him, that he ſhould be a biſhop, a gown being fitteſt to hide his legs, which were ſubject in his childhood to be crooked.

With regard to any unlawful paſſion for women, to the temptations of which the prince's youth and ſituation peculiarly expoſed him, his hiſtorian, who knew him, and obſerved him much, aſſures us, that having been preſent at great feaſts made in the prince's houſe, to which he invited the moſt beautiful ladies of the court and city, he could not diſcover by his highneſs's behaviour, eyes, or countenance, the leaſt appearance of a particular inclination to any one of them; nor was he at any other time witneſs of ſuch words or actions as could juſtly be a ground of the leaſt ſuſpicion of his virtue; though he obſerves, that ſome perſons of that time, meaſuring the prince by themſelves, were pleaſed to conceive and report otherwiſe of him. It is indeed aſſerted, by the writer of *Aulicus Coquinariæ*, believed upon good grounds to be William Saunderſon, Eſq; author of the "Complete Hiſtory of Mary Queen of Scotland, and her ſon and ſucceſſor King James," that the prince made court to the Counteſs of Eſſex (afterwards divorced from the Earl, and married to the Viſcount Rocheſter), before any other lady then living. And Arthur Wilſon mentions the many amorous glances which the prince gave her, till diſcovering that ſhe was captivated with the growing fortunes of Lord Rocheſter, and grounded more hope upon him than the uncertain and hopeleſs love of his highneſs, he ſoon ſlighted her. The learned and pious antiquary, Sir Simonds D'Ewes, in a manuſcript life of himſelf written with his own hand, and brought down to the year 1637, is poſitive, that "notwithſtanding the ineſtimable Prince Henry's martial deſires and initiation into the ways of godlineſs, the counteſs, being ſet on by the earl of Northampton her father's uncle, firſt caught his eye and heart, and afterwards proſtituted herſelf to him, who firſt reaped the fruits of her virginity. But thoſe ſparks of grace which even then began to ſhow their luſtre in him, with thoſe more heroic innate qualities derived from virtue, which gave the law to his more adviſed actions, ſoon raiſed him out of the ſlumber of that diſtemper, and taught him to reject her following temptations with indignation and ſuperciliouſneſs." But theſe authorities, Dr Birch obſerves, ought to have little weight to the prejudice of the prince's character, againſt the direct teſtimony in his favour from ſo well-informed a writer as Sir Charles Cornwallis.

The immature death of the prince concurring with the public apprehenſions of the power of the papiſts, and the ill opinion which the nation then had of the court, gave immediate riſe to ſuſpicions of its being haſtened by poiſon. And theſe ſuſpicions were heightened by the very little concern ſhown by ſome perſons in great ſtations. "To tell you (ſays Richard earl of Dorſet in a letter to Sir Thomas Edmondes, of the 23d of November 1612) that our riſing ſun is ſet ere ſcarcely he had ſhone, and that with him all our glory lies buried, you know and do lament as well as we, and better than ſome do, and more truly; or elſe you are not a man, and ſenſible of this kingdom's loſs." And it is certain, that this loſs made ſo little impreſſion upon the king and his favourite, that the lord viſcount Rocheſter on the 9th of November, three days after it, wrote to Sir Thomas Edmondes to begin a negociation for a marriage between Prince Charles and the ſecond daughter of France. But the ambaſſador, who had more ſenſe of decency, thought it improper to enter upon ſuch an affair ſo ſoon after the late prince's death. Mr Beaulieu, ſecretary to Sir Thomas Edmondes, in a letter of the 12th of November 1612, to Mr Trumbull,, then reſident at Bruſſels, after ſtyling the prince "the flower of his houſe, the glory of his country, and the admiration of all ſtrangers, which in all places had imprinted a great hope on the minds of

† Francis Oſborne, *Traditional Memoirs on the Reign of King James*, ſect. 43.

the well affected, as it had already ſtricken terror into the hearts of his enemies," adds, "who perhaps (for of this lamentable accident we have yet no particular relation) fearing the growing virtues of that young prince, have uſed the traiterous venom of their abominable practices to cut him off in his youth. And this I do not apprehend without cauſe, conſidering the ſeveral advertiſements which I ſaw a month ago coming out of England, Holland, and Calais, of ſtrange rumours which were in theſe parts, of ſome great and imminent practice in hand, for the ſucceſs whereof it was written, that in ſome places our adverſaries had made ſolemn prayers: and out of Calais it was eſpecially advertiſed, that in your parts they were in expectation of the death of ſome great prince. But alas! we did little apprehend, that ſuch ominous prognoſtications would have lighted upon the perſon of that vigorous young prince, whoſe extraordinary great parts and virtues made many men hope and believe, that God had reſerved and deſtined him, as a choſen inſtrument, to be the ſtandard-bearer of his quarrel in theſe miſerable times, to work the reſtoration of his church, and the deſtruction of the Romiſh idolatry."

With the above notion his royal highneſs's mother the queen was peculiarly impreſſed, according to Dr Welwood; who, in his Notes on Arthur Wilſon's Life of King James I. in the Complete Hiſtory of England, p. 714. informs us, though without giving any authority, that when the prince fell into his laſt illneſs, the queen ſent to Sir Walter Raleigh for ſome of his cordials, which ſhe herſelf had taken ſome time before in a fever with remarkable ſucceſs. Raleigh ſent it, together with a letter to the queen, wherein he expreſſed a tender concern for the prince; and, boaſting of his medicine, ſtumbled unluckily upon an expreſſion to this purpoſe, "that it would certainly cure him or any other of a fever, except in caſe of *poiſon*." As the prince took this medicine, and died notwithſtanding its virtues, the queen, in the agony of her grief, ſhowed Raleigh's letter; and laid ſo much weight on the expreſſion about poiſon, that as long as ſhe lived ſhe could never be perſuaded but that the prince had died by that means. Sir Anthony Weldon* ſuggeſts that the prince was poiſoned. The ſame notion is countenanced by Wilſon in his Hiſtory†; and was adopted by Dr Welwood, as already mentioned; who likewiſe, in another work, his *Memoirs*, after ſtyling the prince "the darling of mankind, and a youth of vaſt hopes and wonderful virtues," remarks, that it was the general rumour at the time of his death, that his highneſs was poiſoned; and that there is in print a ſermon preached at St James's upon the diſſolution of his family, that boldly inſinuated ſome ſuch thing. By this ſermon Dr Welwood muſt mean that of Mr Hall cited above; in which, however, at leaſt as it is reprinted in the London edition of his works in 1617 in folio, there is not to be found any expreſſion that carries the leaſt inſinuation of that kind. The writer of the memoirs adds, that Sir Francis Bacon, in his ſpeech at the trial of the earl of Somerſet, had ſome reflections upon the intimacy of that Lord with Sir Thomas Overbury, which ſeemed to point that way; there being ſeveral expreſſions left out of the printed copy that were in the ſpeech. Biſhop Burnet likewiſe tells us, that he was aſſured by Colonel Titus, that he had heard king Charles I. declare, that the prince his brother was poiſoned by the means of the Viſcount Rocheſter, afterwards earl of Somerſet. But it will be perhaps ſufficient to oppoſe to all ſuch ſuggeſtions the unanimous opinion of phyſicians who attended the prince during his ſickneſs, and opened his body after his death: from which, as Dr Welwood himſelf obſerves, there can be no inference drawn that he was poiſoned. To which may be added the authority of Sir Charles Cornwallis ‡, who was well informed, and above all ſuſpicion in this point, and who pronounces the rumours ſpread of his highneſs's having been poiſoned vain; and was fully convinced that his death was natural, and occaſioned by a violent fever.

Henry (Philip), a pious and learned nonconformiſt miniſter, was the ſon of Mr John Henry, page of the back-ſtairs to James duke of York, and was born at Whitehall in 1631. He was admitted into Weſtminſter-ſchool at about 12 years of age; became the favourite of Dr Buſhby, and was employed by him, with ſome others in collecting materials for the Greek grammar he afterwards publiſhed. From thence he removed to Chriſt-church, Oxford; where, having obtained the degree of maſter of arts, he was taken into the family of judge Puleſton, at Emeral in Flintſhire, as tutor to his ſons, and to preach at Worthenbury. He ſoon after married the only daughter and heireſs of Mr Daniel Matthews of Broad-oak, near Whitchurch, by whom he became poſſeſſed of a competent eſtate. When the king and epiſcopacy were reſtored, he refuſed to conform, was ejected, and retired with his family to Broad-oak: here, and in the neighbourhood, he ſpent the remainder of his life, about 28 years, relieving the poor, employing the induſtrious, inſtructing the ignorant, and exerciſing every opportunity of doing good. His moderation in his nonconformity was eminent and exemplary; and upon all occaſions he bore teſtimony againſt uncharitable and ſchiſmatical ſeparation. In church government he wiſhed for archbiſhop Uſher's reduction of epiſcopacy. He thought it lawful to join in the common prayer in public aſſemblies; which, during the time of his ſilence and reſtraint, he commonly attended with his family with reverence and devotion.

Henry (Matthew), an eminent diſſenting miniſter and author, was the ſon of the former, and was born in the year 1662. He continued under his father's care till he was 18 years of age; in which time he became well ſkilled in the learned languages, eſpecially in the Hebrew, which his father had rendered familiar to him from his childhood; and from firſt to laſt the ſtudy of the ſcriptures was his moſt delightful employment. He completed his education in an academy kept at Iſlington by Mr Doolittle, and was afterwards entered in Gray's-Inn for the ſtudy of the law; where he became well acquainted with the civil and municipal law of his own country, and from his application and great abilities it was thought he would have become very eminent in that profeſſion. But at length, reſolving to devote his life to the ſtudy of divinity, in 1686 he retired into the country, and was choſen paſtor of a congregation at Cheſter, where he lived about 25 years, greatly eſteemed and beloved by his people. He had ſeveral calls from London, which he conſtantly declined; but was at laſt prevailed upon to accept an

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* Court and Character of K. James, p. 77, 78.

† P. 62, 63.

‡ Life and Death of Henry, p. 81, 82.

unanimous invitation from a congregation at Hackney. He wrote, 1. Expoſitions of the Bible, in 5 vols folio. 2. The life of Mr Philip Henry. 3. Directions for daily communion with God. 4. A method for prayer. 5. Four diſcourſes againſt vice and immorality. 6. The communicant's companion. 7. Family hymns. 8. A ſcriptural catechiſm. And, 9. A diſcourſe concerning the nature of ſchiſm. He died of an apoplexy at Nantwich, when upon a journey, in 1714; and was interred at Trinity-church in Cheſter.

Henry (Dr Robert), author of the "Hiſtory of Great-Britain, written on a new plan," was the ſon of James Henry farmer at Muirtown in the pariſh of St Ninian's, North Britain, and of Jean Galloway daughter of —— Galloway of Burrowmeadow in Stirlingſhire. He was born on the 18th of February 1718; and having early reſolved to devote himſelf to a literary profeſſion, was educated firſt under a Mr John Nicolſon at the pariſh ſchool of St Ninian's, and for ſome time at the grammar-ſchool of Stirling. He completed his courſe of academical ſtudy at the univerſity of Edinburgh, and afterwards became maſter of the grammar-ſchool of Annan. He was licenſed to preach on the 27th of March 1746, and was the firſt licentiate of the preſbetery of Annan after its erection into a ſeparate preſbytery. Soon after, he received a call from a congregation of Preſbyterian diſſenters at Carliſle. where he was ordained in November 1748. In this ſtation he remained 12 years, and on the 13th of Auguſt 1760 became paſtor of a diſſenting congregation in Berwick upon Tweed. Here he married, in 1763, Ann Balderſton daughter of Thomas Balderſton ſurgeon in Berwick; by whom he had no children, but with whom he enjoyed to the end of his life a large ſhare of domeſtic happineſs. He was removed from Berwick to be one of the miniſters of Edinburgh in November 1768; was miniſter of the church of the New Grey Friars from that time till November 1776; and then became colleague-miniſter in the old church, and remained in that ſtation till his death. The degree of Doctor in Divinity was conferred on him by the univerſity of Edinburgh in 1770; and in 1774 he was unanimouſly choſen moderator of the general aſſembly of the church of Scotland, and is the only perſon on record who obtained that diſtinction the firſt time he was a member of aſſembly.

From theſe facts, which contain the outlines of Dr Henry's life, few events can be expected to ſuit the purpoſe of the biographer. Though he muſt have been always diſtinguiſhed among his private friends, till he was tranſlated to Edinburgh he had few opportunities of being known to the public. The compoſition of ſermons muſt have occupied a chief part of his time during his reſidence at Carliſle, as his induſtry in that ſtation is known to have rendered his labours in this department eaſy to him during the reſt of his life. But even there he found leiſure for other ſtudies; and the knowledge of claſſical literature, in which he eminently excelled, ſoon enabled him to acquire an extent of information which qualified him for ſomething more important than he had hitherto in his view.

Soon after his removal to Berwick, he publiſhed a ſcheme for a raiſing a fund for the benefit of the widows and orphans of Proteſtant diſſenting miniſters in the north of England. This idea was probably ſuggeſted by the proſperity of the fund which had almoſt 30 years before been eſtabliſhed for a proviſion to miniſters widows, &c. in Scotland. But the ſituations of the clergy of Scotland were very different from the circumſtances of diſſenting miniſters in England. Annuities and proviſions were to be ſecured to the families of diſſenters, without ſubjecting the individuals (as in Scotland) to a proportional annual contribution, and without ſuch means of creating a fund as could be the ſubject of an act of parliament to ſecure the annual payments. The acuteneſs and activity of Dr Henry ſurmounted theſe difficulties; and, chiefly by his exertions, this uſeful and benevolent inſtitution commenced about the year 1762. The management was entruſted to him for ſeveral years; and its ſucceſs has exceeded the moſt ſanguine expectations which were formed of it. The plan itſelf, now ſufficiently known, it is unneceſſary to explain minutely. But it is mentioned here, becauſe Dr Henry was accuſtomed in the laſt years of his life to ſpeak of this inſtitution with peculiar affection, and to reflect on its progreſs and utility with that kind of ſatisfaction which a good man can only receive from "the labour of love and good works."

It was probably about the year 1763 that he firſt conceived the idea of his Hiſtory of Great Britain: a work already eſtabliſhed in the public opinion; and which will certainly be regarded by poſterity, not only as a book which has greatly enlarged the ſphere of hiſtory, and gratifies our curioſity on a variety of ſubjects which fall not within the limits preſcribed by preceding hiſtorians, but as one of the moſt accurate and authentic repoſitories of hiſtorical information which Britain has produced. The plan adopted by Dr Henry, which is indiſputably his own, and its peculiar advantages, are ſufficiently explained in his general preface. In every period, it arranges, under ſeparate heads or chapters, the civil and military hiſtory of Great Britain; the hiſtory of religion; the hiſtory of the conſtitution, government, laws, and courts of juſtice; the hiſtory of learning, of learned men, and of the chief ſeminaries of learning; the hiſtory of arts; the hiſtory of commerce, of ſhipping, of money or coin, and of the price of commodities; and the hiſtory of manners, virtues, vices, cuſtoms, language, dreſs, diet, and amuſements. Under theſe ſeven heads, which extend the province of an hiſtorian greatly beyond its uſual limits, every thing curious or intereſting in the hiſtory of any country may be comprehended. But it certainly required more than a common ſhare of literary courage to attempt on ſo large a ſcale a ſubject ſo intricate and extenſive as the hiſtory of Britain from the invaſion of Julius Cæſar. That Dr Henry neither over-rated his powers nor his induſtry, could only have been proved by the ſucceſs and reputation of his works.

But he ſoon found that his reſidence at Berwick was an inſuperable obſtacle in the minute reſearches which the execution of his plan required. His ſituation there excluded him from the means of conſulting the original authorities; and though he attempted to find acceſs to them by means of his literary friends, and with their aſſiſtance made ſome progreſs in his work, his information was notwithſtanding ſo incomplete, that he found it impoſſible to proſecute his plan to his own ſatisfaction, and was at laſt compelled to relinquiſh it.

By the friendſhip of Gilbert Laurie, Eſq; late lord provoſt of Edinburgh; and one of his majeſty's commiſſioners of exciſe in Scotland, who had married the ſiſter of Mrs Henry, he was removed to Edinburgh in 1768; and it is to this event that the public are indebted for his proſecution of the Hiſtory of Great Britain. His acceſs to the public libraries, and the means of ſupplying the materials which theſe did not afford him, were from that time uſed with ſo much diligence and perſeverance, that the firſt volume of his Hiſtory in quarto was publiſhed in 1771, the ſecond in 1774, the third in 1777, the fourth in 1781, and the fifth (which brings down the Hiſtory to the acceſſion of Henry VII.) in 1785. The ſubject of theſe volumes comprehends the moſt intricate and obſcure periods of Britiſh hiſtory; and when we conſider the ſcanty and ſcattered materials which Dr Henry has digeſted, and the accurate and minute information which he has given us under every chapter of his work, we muſt have a high opinion both of the learning and induſtry of the author, and of the vigour and activity of his mind: eſpecially when it is added, that he imployed no amanuenſis, but completed the manuſcript with his own hand; and that, excepting the firſt volume, the whole book, ſuch as it is, was printed from the original copy. Whatever corrections were made on it, were inſerted by interlineations, or in reviſing the proof-ſheets. He found it neceſſary, indeed, to confine himſelf to a firſt copy, from an unfortunate tremor in his hand, which made writing extremely inconvenient, which obliged him to write with his paper on a book placed on his knee inſtead of a table, and which unhappily increaſed to ſuch a degree that in the laſt years of his life he was often unable to take his victuals without aſſiſtance. An attempt which he made after the publication of the fifth volume to employ an amanuenſis did not ſucceed. Never having been accuſtomed to dictate his compoſitions, he found it impoſſible to acquire a new habit; and though he perſevered but a few days in the attempt, it had a ſenſible effect on his health, which he never afterwards recovered.—An author has no right to claim indulgence, and is ſtill leſs entitled to credit, from the public for any thing which can be aſcribed to negligence in committing his manuſcripts to the preſs; but conſidering the difficulties which Dr Henry ſurmounted, and the accurate reſearch and information which diſtinguiſh his hiſtory, the circumſtances which have been mentioned are far from being unintereſting, and muſt add conſiderably to the opinion formed of his merit among men who are judges of what he has done. He did not profeſs to ſtudy the ornaments of language; but his arrangement is uniformly regular and natural, and his ſtyle ſimple and perſpicuous. More than this he has not attempted, and this cannot be denied him. He believed that the time which might be ſpent in poliſhing or rounding a ſentence was more uſefully employed in inveſtigating and aſcertaining a fact: And as a book of facts and ſolid information, ſupported by authentic documents, his hiſtory will ſtand a compariſon with any other hiſtory of the ſame period.

But Dr Henry had other difficulties to ſurmount than thoſe which related to the compoſition of his work. Not having been able to tranſact with the bookſellers to his ſatisfaction, the five volumes were originally publiſhed at the riſk of the author. When the firſt volume appeared, it was cenſured with an unexampled acrimony and perſeverance. Magazines, reviews, and even newſpapers, were filled with abuſive remarks and invectives, in which both the author and the work were treated with contempt and ſcurility. When an author has once ſubmitted his works to the public, he has no right to complain of the *juſt* ſeverity of criticiſm. But Dr Henry had to contend with the inveterate ſcorn of malignity. In compliance with the uſual cuſtom, he had permitted a ſermon to be publiſhed which he had preached before the ſociety in Scotland for propagating Chriſtian knowledge in 1773; a compoſition containing plain good ſenſe on a common ſubject, from which he expected no reputation. This was eagerly ſeized on by the adverſaries of his Hiſtory, and torn to pieces with a virulence and aſperity which no want of merit in the ſermon could juſtify or explain. An anonymous letter had appeared in a newſpaper to vindicate the Hiſtory from ſome of the unjuſt cenſures which had been publiſhed, and aſſerting from the real merit and accuracy of the book the author's title to the approbation of the public. An anſwer appeared in the courſe of the following week, charging him, in terms equally confident and indecent, with having written this letter in his own praiſe. The efforts of malignity ſeldom fail to defeat their purpoſe, and to recoil on thoſe who direct them. Dr Henry had many friends, and till lately had not diſcovered that he had any enemies. But the author of the anonymous vindication was unknown to him, till the learned and reſpectable Dr Macqueen, from the indignation excited by the confident petulance of the anſwer, informed him that the letter had been written by him. Theſe anecdotes are ſtill remembered. The abuſe of the Hiſtory, which began in Scotland, was renewed in ſome of the periodical publications in South Britain; though it is juſtice to add (without meaning to refer to the candid obſervations of Engliſh critics), that in both kingdoms the aſperity originated in the ſame quarter, and that paragraphs and criticiſms written at Edinburgh were printed in London. The ſame ſpirit appeared in Strictures publiſhed on the ſecond and third volumes; but by this time it had in a great meaſure loſt the attention of the public. The malevolence was ſufficiently underſtood, and had long before become fatal to the circulation of the periodical paper from which it originally proceeded. The book, though printed for the author, had ſold beyond his moſt ſanguine expectations; and had received both praiſe and patronage from men of the firſt literary characters in the kingdom: and though, from the alarm which had been raiſed, the bookſellers did not venture to purchaſe the property till after the publication of the fifth volume, the work was eſtabliſhed in the opinion of the public, and at laſt rewarded the author with a high degree of celebrity, which he happily lived to enjoy.

In an article relating to Dr Henry's life, not to have mentioned the oppoſition which his Hiſtory encountered, would have been both affectation and injuſtice. The facts are ſufficiently remembered, and are unfortunately too recent to be more minutely explained.

Henry.

Henry.

That they contributed at firſt to retard the ſale of the work is undeniable, and may be told without regret now that its reputation is eſtabliſhed. The book has raiſed itſelf to eminence as a Hiſtory of Great Britain by its own merits; and the means employed to obſtruct its progreſs have only ſerved to embelliſh its ſucceſs.

Dr Henry was no doubt encouraged from the firſt by the decided approbation of ſome of his literary friends, who were allowed to be the moſt competent judges of his ſubject; and in particular by one of the moſt eminent hiſtorians of the preſent age, whoſe hiſtory of the ſame periods juſtly poſſeſſes the higheſt reputation. The following character of the firſt and ſecond volumes was drawn up by that gentleman, and is well intitled to be inſerted in a narrative of Dr Henry's life. "Thoſe who profeſs a high eſteem for the firſt volume of Dr Henry's hiſtory, I may venture to ſay, are almoſt as numerous as thoſe who have peruſed it, provided they be competent judges of a work of that nature, and are acquainted with the difficulties which attend ſuch an undertaking. Many of thoſe who had been ſo well pleaſed with the firſt were impatient to ſee the ſecond volume, which advances into a field more delicate and intereſting; but the Doctor hath ſhown the maturity of his judgment, as in all the reſt, ſo particularly in giving no performance to the public that might appear crude or haſty, or compoſed before he had fully collected and digeſted the materials. I venture with great ſincerity to recommend this volume to the peruſal of every curious reader who deſires to know the ſtate of Great Britain in a period which has hitherto been regarded as very obſcure, ill ſupplied with writers, and not poſſeſſed of a ſingle one that deſerves the appellation of a good one. It is wonderful what an inſtructive, and even entertaining, book the Doctor has been able to compoſe from ſuch unpromiſing materials: *Tantum ſeries juncturaque pollet.* When we ſee thoſe barbarous ages delineated by ſo able a pen, we admire the oddneſs and ſingularity of the manners, cuſtoms, and opinions, of the times, and ſeem to be introduced into a new world; but we are ſtill more ſurpriſed, as well as intereſted, when we reflect that thoſe ſtrange perſonages were the anceſtors of the preſent inhabitants of this iſland.—The object of an antiquary hath been commonly diſtinguiſhed from that of an hiſtorian; for though the latter ſhould enter into the province of the former, it is thought that it ſhould only be *quanto baſta*, that is, ſo far as is neceſſary, without comprehending all the minute diſquiſitions which give ſuch ſupreme pleaſure to the mere antiquary. Our learned author hath fully reconciled theſe two characters. His hiſtorical narrative is as full as thoſe remote times ſeem to demand, and at the ſame time his inquiries of the antiquarian kind omit nothing which can be an object of doubt or curioſity. The one as well as the other is delivered with great perſpicuity, and no leſs propriety, which are the true ornaments of this kind of writing. All ſuperfluous embelliſhments are avoided; and the reader will hardly find in our language any performance that unites together ſo perfectly the two great points of entertainment and inſtruction."—The gentleman who wrote this character died before the publication of the third volume.—The progreſs of his work introduced Dr Henry to more extenſive patronage, and in particular to the notice and eſteem of the earl of Mansfield. That venerable nobleman, who is ſo well intitled to the gratitude and admiration of his country, thought the merit of Dr Henry's hiſtory ſo conſiderable, that, without any ſolicitation, after the publication of the fourth volume he applied perſonally to his majeſty to beſtow on the author ſome mark of his royal favour. In conſequence of this Dr Henry was informed by a letter from Lord Stormont, then ſecretary of ſtate, of his Majeſty's intention to confer on him an annual penſion for life of 100l. "conſidering his diſtinguiſhed talents and great literary merit, and the importance of the very uſeful and laborious work in which he was ſo ſucceſsfully engaged, as titles to his royal countenance and favour." The warrant was iſſued on the 28th of May 1781; and his right to the penſion commenced from the 5th of April preceding. This penſion he enjoyed till his death, and always conſidered it as inferring a new obligation to perſevere ſteadily in the proſecution of his work. From the earl of Mansfield he received many other teſtimonies of eſteem both as a man and as an author, which he was often heard to mention with the moſt affectionate gratitude. The octavo edition of his hiſtory, publiſhed in 1788, was inſcribed to his lordſhip. The quarto edition had been dedicated to the king.

The property of the work had hitherto remained with himſelf. But in April 1786, when an octavo edition was intended, he conveyed the property to Meſſrs Cadell and Strachan; reſerving to himſelf what ſtill remained unſold of the quarto edition, which did not then exceed eighty-one complete ſets. A few copies were afterwards printed of the volumes of which the firſt impreſſion was exhauſted, to make up additional ſets: and before the end of 1786, he ſold the whole to Meſſrs Cadell and Strachan. By the firſt tranſaction he was to receive 1000l. and by the ſecond betwixt 300l. and 400l.; about 1400l. in all. Theſe ſums may not be abſolutely exact, as they are ſet down from memory; but there cannot be a miſtake of any conſequence on the one ſide or the other.—Dr Henry had kept very accurate accounts of the ſales from the time of the original publication; and after his laſt tranſaction with Meſſrs Cadell and Strachan, he found that his real profits had amounted in whole to about 3300 pounds: a ſtriking proof of the intrinſic merit of a work which had forced its way to the public eſteem unprotected by the intereſt of the bookſellers, and in ſpite of the malignant oppoſition with which the firſt volumes had to ſtruggle.

The proſecution of his hiſtory had been Dr Henry's favourite object for almoſt 30 years of his life. He had naturally a ſound conſtitution, and a more equal and larger portion of animal ſpirits than is commonly poſſeſſed by literary men. But from the year 1785 his bodily ſtrength was ſenſibly impaired. Notwithſtanding this, he perſiſted ſteadily in preparing his ſixth volume, which brings down the hiſtory to the acceſſion of Edward VI. and has left it in the hands of his executors almoſt completed. Scarcely any thing remains unfiniſhed but the two ſhort chapters on arts and manners; and even for theſe he has left materials and authorities ſo diſtinctly collected, that there can be no great difficulty in ſupplying what is wanting. It is hoped that this volume may be ready for publication ſome time in the winter or ſpring 1792; and that it will be found intitled to the ſame favourable reception from the public which has been given to the former volumes. It was written under the diſadvantages of bad health and great weakneſs of body. The tremulous motion of his hand had increaſed ſo as to render writing much more difficult to him than it had ever been: but the vigour of his mind and his ardour were unimpaired; and independent of the general character of his works, the poſthumous volume will be a laſting monument of the ſtrength of his faculties, and of that literary induſtry and perſeverance which ended only with his life.

Dr Henry's original plan extended from the invaſion of Britain by the Romans to the preſent times. And men of literary curioſity muſt regret that he has not lived to complete his deſign; but he has certainly finiſhed the moſt difficult parts of his ſubject. The periods after the acceſſion of Henry VI. afford materials more ample, better digeſted, and much more within the reach of common readers.

Till the ſummer of 1790 he was able to purſue his ſtudies, though not without ſome interruptions. But at that time he loſt his health entirely; and, with a conſtitution quite worn-out, died on the 24th of November of that year, in the 73d year of his age.—He was buried in the church-yard of Polmont, where it is propoſed to erect a monument to his memory.

HENTINGS, in agriculture, a term uſed by the farmers for a particular method of ſowing before the plough; the corn being caſt in a ſtraight line juſt where the plough is to come, is by this means preſently ploughed in. By this way of ſowing they think they ſave a great deal of ſeed and other charge, a dexterous boy being as capable of ſowing this way out of his hat as the moſt ſkilful ſeedſman.

HENTING is alſo a term uſed by the ploughmen, and others, to ſignify the two furrows that are turned from one another at the bottom, in the ploughing of a ridge. The word ſeems to be a corruption of ending, becauſe thoſe furrows made an end of ploughing the ridges. The tops of the ridges they call *veerings*.

HEPAR SULPHURIS, or *Liver of Sulphur*, a combination of alkaline ſalt and ſulphur. See CHEMISTRY, n° 1021—1025.

By means of the fume ariſing on the decompoſition of hepar ſulphuris by an acid, Mr Bergman hath found a method of imitating the hot or ſulphureous mineral waters, to as great perfection as the cold ones are now imitated by fixed air. The proceſs conſiſts ſimply in adding the vitriolic acid to hepar ſulphuris, and impregnating water with the peculiar ſpecies of air that ariſes from this mixture; in the ſame manner as when water is impregnated with the fixed air ariſing from the mixture of that or any other acid with chalk. This *hepatic air*, as the author calls it, is very readily abſorbed by water; to which it gives the ſmell, taſte, and all the other ſenſible qualities of the ſulphureous waters. A Swediſh cantharus of diſtilled water, containing 12¼ Swediſh cubic inches, will abſorb about 60 cubic inches of this hepatic air; and on dropping into it the nitrous acid, it will appear, that a real ſulphur is contained, in a ſtate of perfect ſolution, in this water, to the quantity of eight grains. It does not appear that any other acid, except what the author calls the *dephlogiſticated marine acid*, will produce this effect.—When any particular ſulphureous water is to be imitated, we ſcarce need to obſerve, that the ſaline, or other contents peculiar to it, are to be added to the artificial hepatic water. Inſtead of the liver of ſulphur, the operator may uſe a mixture of three parts of filings of iron and two parts of ſulphur melted together.

It may, perhaps, be thought, that water thus prepared, does not differ from that in which a portion of the hepar ſulphuris has been diſſolved; but it appears evidently to differ from it in this material circumſtance;—that in the ſolution of hepar ſulphuris, the ſulphur is held in ſolution by the water, through the means of the alkali combined with it: whereas, in Mr Bergman's proceſs, it does not appear probable that the hepar ſulphuris riſes ſubſtantially in the form of air; for, in that caſe, its preſence in the hepatic water might be detected by means of the weakeſt of the acids (even the mephitic), which would precipitate the ſulphur from it. Nor can it be ſuppoſed that any portion or conſtituent part of the alkali itſelf (except a part of its remaining fixed air) can come over. The water, therefore, muſt owe its impregnation to the ſulphur, raiſed, in ſome peculiar manner, into the ſtate of an elaſtic vapour; permanent, when the experiment is made in quick-ſilver; but condenſible in water, and rendered ſoluble in that fluid through the means of ſome unknown principle combined with it, and which the author ſuppoſes to be the matter of heat, combined with it through the medium of phlogiſton.

HEPATIC, in medicine and anatomy, any thing belonging to the liver.

HEPATIC Air, a permanently elaſtic fluid, of a very diſagreeable odour ſomewhat like that of rotten eggs, obtained in plenty from combinations of ſulphur with earths, alkalies, metals, &c. and ſometimes from combinations of alkalies with ſubſtances which do not appear to contain any ſulphur.

The nature of this fluid has been particularly examined by Mr Kirwan, of whoſe experiments we have an account in the 76th volume of the Philoſophical Tranſactions, and of which the reſults are as follow.

1. By weighing it in a glaſs bottle exhauſted in the moſt perfect manner by an air-pump, its ſpecific gravity is found to be to that of common air as 10,000 to 9038.

2. Though inflammable, it never detonates with common air; nor can it be fired in a narrow-mouthed veſſel, unleſs mixed with a conſiderable proportion of this air. Mr Scheele found that it would take fire when mixed with two-thirds of common air; but M. Sennebier informs us, that it cannot be fired by the electric ſpark even when mixed with any quantity of reſpirable air. Mr Kirwan found one part of the hepatic air, and one and a half of common air, to burn blue without flaſhing or detonating; and that, during the combuſtion, ſulphur is conſtantly depoſited, and a ſmell of vitriolic acid perceived. Mixed with an equal part of nitrous air, it burns with a bluiſh, green, and yellow lambent flame: it depoſits ſulphur alſo; and in proportion as the latter is depoſited, a candle dipped in the air burns more weakly, and is at laſt extinguiſhed. Two parts of nitrous and one of hepatic air burn par-

tially with a green flame; the reſiduum extinguiſhing a candle, which reddens on coming into contact with the atmoſphere. One part of common air being admitted to equal parts of nitrous and hepatic air, ſulphur was inſtantly precipitated, and the three meaſures reduced to 2.4; which burned on the ſurface with a greeniſh flame, but extinguiſhed the candle when ſunk deeper. Four parts of hepatic, with one of common air, burned rapidly with a blue flame; and a mixture of equal parts of dephlogiſticated and hepatic airs which had ſtood eight days, went off with a report like a piſtol, and ſo inſtantaneouſly that the colour of the flame could ſcarcely be diſcerned.

3. Hepatic air turns the tincture of litmus red, which Bergman ſuppoſes it would not do if it were waſhed; but Mr Kirwan found no alteration after paſſing two meaſures through water, or even after boiling the air out of water impregnated with it. Nay, the ſame hepatic air which had once reddened litmus, continued to do ſo after being put to a freſh quantity of the tincture.

4. There is a conſiderable difference in the miſcibility of hepatic air with water according to the materials from which the former is made. By ſlight agitation, water in the temperature of 66° imbibes two thirds of its bulk of air extracted from alkaline or calcareous hepar by means of marine acid. An equal quantity of water diſſolves three-fourths of its bulk of hepatic air extracted by the ſame acid from martial hepar; eight-tenths of that extracted by means of the concentrated vitriolic acid, or the dilute nitrous or ſacharine acids in the temperature of 60°; ſeven-tenths of that extracted by ſedative acid; nine-tenths of that made with the acetous acid, and of that afforded by oil of olives; and laſtly, its own bulk of that produced from a mixture of ſugar and ſulphur. In general, however, that produced by the greateſt degree of heat ſeemed to be the moſt eaſily miſcible; though in ſome inſtances, particularly that of acetous hepatic air, this does not take place.

5. The union between hepatic air and water is not permanent. Even when the water has been boiled in order to expel the air it naturally contains previous to its union with the hepatic air, the fluid grows very ſoon turbid, and depoſits the hepatic air in the form of ſulphur, though the bottle be ever ſo well corked, or ſtand inverted in water or mercury. The abſorption of the air by water, however, does not ſeem to occaſion any decompoſition in the former, as the quantity left will be abſorbed like the former by adding more water. It cannot be expelled from water till it comes near the boiling point.

6. No kind of hepatic air, except that produced from charcoal, precipitates lime from lime-water; and even this does it only in a very ſlight degree, unleſs a large quantity of air paſs through a ſmall one of water.

7. The moſt ſenſible teſt of the preſence of hepatic air is the ſolution of ſilver in the nitrous acid. This, according as the nitrous acid is more or leſs ſaturated with ſilver, becomes black, brown, or reddiſh brown, by the contact with hepatic air, however mixed with common air or any other permanently elaſtic fluid. When the acid is not ſaturated, or is in large proportion, the brown or black precipitate, which is nothing but ſulphurated ſilver, is rediſſolved.

8. All hepatic air ſuffers ſome diminution by ſtanding over mercury, and blackens the ſurface of the metal; particularly that made from charcoal.

9. Mixtures of hepatic air with common, dephlogiſticated, and phlogiſticated airs, continued for a long time either totally undiminiſhed or very little ſo, as did thoſe alſo with inflammable marine acid air and fixed air; only blacking the ſurface of the mercury.

10. Two meaſures of hepatic air being introduced to two of vitriolic air, a whitiſh yellow depoſition immediately covered the top and ſides of the jar, and both airs were without any agitation reduced to little more than one meaſure. As the glaſs, however, was obſcured by a whitiſh ſcurf over its whole inſide, it was found neceſſary to repeat the experiment. One cubic inch of hepatic air was then added to five of vitriolic air; and, in leſs than a minute, without any agitation, the ſides of the glaſs were covered with a whitiſh ſcum apparently moiſt, and a diminution of more than one ounce meaſure took place. In four hours after a ſecond meaſure of hepatic air was introduced; which was followed by a ſecond depoſition of whitiſh matter and diminution of the air. Next day three other meaſures were added at the interval of four hours between each; when, finding ſtill a farther diminution, another meaſure was added next day. The whole quantity of 11 ounce meaſures was thus reduced at laſt to three, which ſeemed to be little elſe than phlogiſticated air. The water in which the ſulphur precipitated from the hepatic air was waſhed, and appeared to contain ſome vitriolic acid and fixed air.

11. A mixture of two meaſures of nitrous, and as much hepatic air, was little altered at firſt even by agitation; but, on ſtanding 36 hours, both were reduced by ſomething more than one third of the whole. The mercury was not blackened, but particles of yellow ſulphur were depoſited both upon the ſides of the glaſs and the ſurface of the metal. The air which remained had ſtill an hepatic ſmell, and was ſomewhat more diminiſhed by water: a candle burned naturally in the unabſorbed part. The water had all the properties of that which had abſorbed hepatic air. On adding nine cubic inches of nitrous air to eight of hepatic, a yellowiſh cloud inſtantly appeared, a ſlight white ſcum was depoſited on the ſides of the jar; and the whole ſeemed to be diminiſhed about two cubic inches, the temperature of the room being then 72°. In 48 hours the whole was reduced to ſix cubic inches, and the top and ſides of the jar covered with a cake of white ſulphur; the heat of the room being conſtantly between 60 and 70°. The reſiduum was examined in 24 hours after, and had a pretty ſtrong ſmell of alkaline air. A candle burned in it naturally; and it did not affect tincture of litmus, lime-water, or acetous barytes. It was not affected by any kind of air except the dephlogiſticated kind, and this produced only a ſlight redneſs and diminution; it produced alſo a ſlight white precipitate in ſolution of ſilver. Hence it appeared that this was *dephlogiſticated nitrous air*, or, as our author thinks, it ought rather to be called *deacidified nitrous air*.

12. Mr Kirwan ſuppoſing that an uncombined acid in the nitrous air was the cauſe of precipitation, he deprived ſome nitrous air of this acid as perfectly as poſſible before mixing it with hepatic air; which was

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done by admitting alkaline air to it, and then waſhing out the ammoniacal compound in diſtilled water. By being deprived of its acid it loſt about one-ſixth of its bulk; and it was diminiſhed by common air in the ſame manner that nitrous air uſually is. Seven cubic inches of hepatic air were then admitted all at once to eight of the purified nitrous air. No cloud or other mark of any precipitation appeared: but in ſix hours the whole was reduced to five cubic inches, the temperature of the room being 76°; but the diminution went no further in 18 hours after. A much whiter ſulphur was depoſited than in the former experiment; and both in this and the former, that part which was intercepted by the riſing of the mercury betwixt the metal and the ſide of the jar was of a yellow and red ſhining colour, and not black, as that depoſited in mercury uſually is. The reſiduum flaſhed with ſuch violence as to extinguiſh a candle dipped into it, the flame being exceedingly white and vivid; though it did not detonate in the leaſt, but rather appeared like dephlogiſticated air. The jar out of which it had been transferred had a ſtrong alkaline ſmell. It was not in the leaſt diminiſhed by nitrous air, even when heated to 150 degrees. Water poured into the jar in which the ſulphur was depoſited, produced a bluiſh white cloud in ſolution of ſilver, though inſipid to the taſte; whence it appears, that whatever this air may be, it had been deacidified by hepatic air ſtill more perfectly than that in which a candle burns naturally, but was by no means dephlogiſticated.

13. Perfectly pure alkaline and hepatic airs mixed together would probably deſtroy each other; but Mr Kirwan never had it in his power to do this entirely. Six meaſures of hepatic air from liver of ſulphur, and ſix of alkaline air, immediately throw up a white cloud, leaving a whitiſh ſcum on the ſide of the jar, and are reduced to about one ounce meaſure. On adding water this is reduced to about one half; and a candle burns naturally in it. This reſiduum, however, was afterwards found to be only the common air of the veſſels.

14. One meaſure of oil of vitriol, of the ſpecific gravity of 1.863, abſorbed two meaſures of hepatic air all to one-tenth; the acid being whitened by a copious depoſition of ſulphur.

15. A meaſure of red nitrous acid, of the ſpecific gravity of 1.430, was introduced to an equal meaſure of hepatic air: red vapours inſtantly aroſe; and only one-tenth or one-twelfth of a meaſure remained in an aerial form; but as the acid acted on the mercury, it was neceſſary to uſe water, by which the whole was abſorbed. No ſulphur was precipitated on this occaſion. The experiment was repeated in another manner, but with little ſucceſs; ſo that Mr Kirwan, finding it ſo difficult to uſe the concentrated nitrous acid, determined to try its effects upon hepatic air by diluting the acid to ſuch a degree that it could not act upon mercury without the aſſiſtance of heat. In this caſe the acid was whitened, eight-tenths of the air abſorbed, and the reſiduum detonated. A ſtill greater quantity was abſorbed when the experiment was made with hepatic air made from liver of ſulphur; but the reſiduum, inſtead of detonating, burned with a blue and greeniſh flame, depoſiting ſulphur upon the ſides of the jar. This dilute acid abſorbed about three times its bulk of hepatic air; but on expelling the ſame from it again by heat, the ſixth part only was obtained, and in this a candle burned naturally.

16. Two meaſures of alkaline hepatic air were abſorbed by one of ſtrong marine acid to one-fifth of a meaſure, after a ſlight agitation. On adding a third meaſure of hepatic air, the whole was abſorbed to half a meaſure. The ſulphur precipitated in this experiment was attracted by the mercury, and blackened it; which did not happen in the former caſes, by reaſon of the ſtronger attraction of the acid for the ſulphur. The reſiduum burned as pure hepatic air.

17. Diſtilled vinegar abſorbs nearly its own bulk of hepatic air, and becomes ſlightly whitened; but by agitation it may be made to take up about twice its bulk, and then becomes very turbid.

18. One meaſure of cauſtic vegetable alkali, the ſpecific gravity of which was 1.043, abſorbed nearly four meaſures of alkaline hepatic air, which rendered it brown at firſt, but after ſome time it grew clear and depoſited ſulphur, blackening the ſurface of the mercury.

19. One meaſure of cauſtic volatile alkali, of the ſpecific gravity of 0.9387, abſorbed 18 of hepatic air. A greater quantity of alkali would abſorb more hepatic air, ſix meaſures of the alkaline air uniting to ſeven of the hepatic; and thus the ſtrength of alkaline liquors, and their real contents, may, according to our author, be determined better than by any other method. The ſmoking liquor of Boyle (a ſtrong volatile tincture of ſulphur) may be eaſily prepared by putting volatile alkali in the middle veſſel of Dr Nooth's apparatus, and decompoſing liver of ſulphur, or artificial pyrites in the lowermoſt one by means of marine acid.

20. Olive oil abſorbs nearly its own bulk of hepatic air; and gets a greeniſh tinge from it.

21. Oil of turpentine abſorbs more than its own bulk of this air, but then becomes turbid. A white cloud appears when water is put to the mixture.

22. Spirit of wine, of the ſpecific gravity of 0.835, abſorbed nearly three times its bulk of hepatic air, and became brown. Thus ſulphur may be combined with ſpirit of wine more eaſily than by the method uſed by Count Lauragais, the only one hitherto known. Water partly precipitates the ſulphur.

23. New milk ſcarcely abſorbs one-tenth of its bulk of this air, and is not in the leaſt coagulated.

24. With an equal bulk of vitriolic ether the bulk of the air is at firſt increaſed; but afterwards one-half is abſorbed, and a ſlight precipitation appears. The ſmell is compounded of that of ether and hepatic air; but on adding water it becomes very offenſive, reſembling that of putrefying animal ſubſtances.

25. On adding a meaſure and an half of nitrous ſolution of ſilver to one of hepatic air, the latter was abſorbed immediately, and without any agitation, the ſolution at the ſame time becoming black. The remaining air admitted a candle to burn naturally in it. Hepatic air was likewiſe abſorbed, but with more difficulty, and in ſmaller quantity, by the vitriols of iron and ſilver; the latter was blackened; the former became white at firſt, but darker by agitation; the reſiduum burned blue, as hepatic air uſually does.

26. Sulphurated ſpirit of wine precipitates lime-water, which highly rectified ſpirit of wine will alſo do by itſelf. It alſo precipitates and gives a brown colour to acetous baro-ſelenite, which is likewiſe done by ſpirit of wine: the ſolution of ſilver is turned black or brown by it. Sulphur is precipitated from it by concentrated vitriolic acid, which cannot be done either by the nitrous or muriatic acids.

27. Water ſaturated with hepatic air turns the tincture of litmus red; does not affect lime-water; forms a cloud in the ſolution of acetous baro-ſelenite, though not in that of the marine: it does not alter the ſolutions of other earths. It produces a white precipitate in the ſolution of vitriol of iron, or ſolution of that metal in ſpirit of ſalt: in nitrous ſolution of copper it throws down a brown precipitate, and the colour of the liquid is changed from blue to green; the precipitate being rediſſolved by agitation. In ſolution of vitriol of copper it forms a black precipitate. It throws down a yellowiſh white precipitate in ſolution of tin in aqua-regia; a black one from ſolution of gold; a red and yellow one from that of antimony; and one of red mixed with white from ſolution of platina. Black precipitates are formed with nitrous ſolutions of lead and ſilver; but if theſe are not perfectly ſaturated with metal, the ſolutions will be brown, or reddiſh brown, and may be rediſſolved by agitation. Nitrous ſolution of mercury is precipitated of a yellowiſh brown; corroſive ſublimate of a yellow mixed with black, but which becomes white by agitation. Nitrous ſolution of biſmuth becomes reddiſh brown, and even aſſumes a metallic appearance. Solution of cobalt becomes dark; that of arſenic in nitrous acid becomes yellow, mixed with red and white; forming realgar and orpiment. On dropping into hepatic water oil of vitriol of the ſpecific gravity of 1.863, the mixture becomes ſlightly turbid; but on dropping into it the volatile vitriolic acid, a bluiſh white and much denſer cloud is formed. A copious white precipitation is occaſioned by the ſtrong nitrous acid, whether phlogiſticated or not; but dilute nitrous acid produces no change. Green nitrous acid, the ſpecific gravity 1.328, inſtantly produces ſulphur. A ſlight cloud is produced by ſtrong marine acid; but neither diſtilled vinegar nor acid of ſugar has any ſuch effect. According to Mr Bergman, hepatiſed water, in a well cloſed veſſel, will diſſolve iron in a few days; but the experiment did not ſucceed with Mr Kirwan, neither could he diſſolve any other metal in this water, though the ſulphur united with many of them into an inſoluble maſs; whence our author concludes, that metallic ſubſtances cannot be found in hepatiſed waters.

28. Colourleſs alkaline liquors acquire a browniſh tinge from hepatic air; the reſiduum they leave being of the ſame nature with what they abſorb. A cauſtic fixed alkaline liquor, ſaturated with this air, precipitates barytes from the acetous acid of a yellowiſh white colour; decompoſing likewiſe other earthy ſolutions, and the precipitate varying according to their purity; a teſt which our author ſuppoſes may be improved to ſuch a degree as to ſupply the place of the Pruſſian alkali. It precipitates alſo ſolution of vitriol of iron as well as marine ſalt of iron, of a black colour; but the latter generally whitens by agitation. Solutions of ſilver and lead are alſo precipitated black with ſome mixture of white: that of gold is alſo blackened; and ſolution of platina becomes brown. Solutions of copper let fall a reddiſh black or brown precipitate. Sublimate yields a precipitate partly white and black, and partly orange and greeniſh. A nitrous ſolution of arſenic forms a yellow and orange precipitate; and that of regulus of antimony in aqua regia, an orange precipitate mixed with black. Nitrous ſolution of zinc yields a dirty white precipitate; that of biſmuth a brown mixed with white; and that of cobalt a brown and black precipitate. Pruſſian alkali yields a purple precipitate, which is eaſy rediſſolved. Tincture of radiſhes, our author's teſt for alkalies, was turned green.

29. On adding a few grains of iron, copper, lead, tin, zinc, biſmuth, regulus of antimony, and arſenic, to a ſolution of liver of ſulphur, all the metals were found to attract ſulphur from the fixed alkali, excepting zinc and tin. Iron, arſenic, regulus of antimony, and lead, were moſt altered; copper next, and biſmuth the leaſt. No part of the metals appeared to be diſſolved.

30. Water ſaturated with the condenſed reſiduum of alkaline and hepatic air, *i. e.* with the pureſt volatile liver of ſulphur, does not precipitate marine ſelenite, though it forms a ſlight brown and white cloud in that of marine baro-ſelenite. It throws down a black precipitate in ſolution of vitriol of iron, and a black and white one in that of marine ſalt of iron; but by agitation this became entirely white. Vitriol of copper, and nitrous ſalt of the ſame metal, are both precipitated of a brown and red colour. Tin diſſolved in aqua-regia yields a yellowiſh precipitate; gold, a dilute yellow and reddiſh brown; platina, a fleſh-coloured precipitate; and regulus of antimony, a yellowiſh red. Silver is precipitated black, as well as lead, from the nitrous and acetous acids. Corroſive ſublimate became red for a moment; but in a little time its precipitate appeared partly black and partly white. A ſimilar precipitate is afforded alſo by the nitrous ſolution of biſmuth; but partly mixed with a reddiſh-brown colour, and has ſomething likewiſe of a metallic appearance; the precipitate of cobalt is black, or deep brown. Solutions of arſenic yield precipitates of a yellow colour, and more or leſs red; thoſe of zinc of a dirty white.—All thoſe colours, however, vary, as the liquors are more or leſs ſaturated previous to and after their mixture, and the time they have ſtood together.

From theſe experiments Mr Kirwan concludes, that hepatic air conſiſts merely of ſulphur rarefied by elementary fire, or the matter of heat. Some have ſuppoſed that it conſiſts of liver of ſulphur itſelf volatiliſed; but this our author denies, for the following reaſons: 1. It is evidently, tho' weakly, acid; reddening litmus, precipitating acetous baro-ſelenite, though none of the other ſolutions of earths. 2. It may be extracted from materials which either contain no alkali at all, or next to none; as iron, ſugar, oil, charcoal, &c. 3. It is not decompoſed by marine or fixed air; by which nevertheleſs liver of ſulphur may be decompoſed.

Our author informs us, that he was formerly of opinion that ſulphur was held in ſolution in hepatic air, either by means of vitriolic or marine air: but neither of theſe is eſſential to the conſtitution of hepatic air as ſuch, ſince it is producible from materials that contain neither of theſe acids; and from whatever ſubſtance

it

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it is obtained, it always affords the ſame character, viz. that of the vitriolic acid exceedingly weakened, ſuch an acid as we may ſuppoſe ſulphur itſelf to be. This ſubſtance indeed, even in its concrete ſtate, manifeſts the properties of an acid, by uniting with alkalies, calcareous and ponderous earths, as well as with moſt metals, which a very weak acid might be ſuppoſed to do.

As phoſphorus bears a conſiderable reſemblance in its conſtitution to ſulphur, Mr Kirwan determined to make ſome experiments upon it in ſimilar circumſtances. He therefore gently heated 10 or 12 grains of phoſphorus, mixed with about half an ounce of cauſtic fixed alkaline ſolution, in a very ſmall vial furniſhed with a bent tube, and received the air over mercury. Two ſmall exploſions took place on the firſt application of heat, attended with a yellow flame and white ſmoke, which penetrated through the mercury into the receiver. This was followed by an equable production of air; but at laſt the phoſphorus began to ſwell and froth up, burſt with a loud exploſion, and a violent flame immediately iſſued from it. Only about eight cubic inches of air were obtained. Theſe were but very ſlightly diminiſhed by agitation in water; after which a cloudineſs took place, but the air ſoon recovered its tranſparency. Water impregnated with it ſlightly reddened tincture of litmus, but did not affect Pruſſian alkali. It had no effect upon the nitrous ſolutions of copper, lead, zinc, or cobalt; nor on thoſe of iron or tin in marine acid and aqua-regia; nor on the vitriolic ſolutions of iron, copper, tin, lead, zinc, regulus of antimony, arſenic, or manganeſe; nor on the marine ſolutions of iron, copper, lead, zinc, cobalt, arſenic, or manganeſe. The nitrous ſolution of ſilver was precipitated of a black colour, and the vitriolic of a brown: nitrous ſolution of mercury, made without heat, precipitated a brown or black powder; but vitriol of mercury firſt became reddiſh, and afterwards white: corroſive ſublimate a yellow mixed with red and white. Gold diſſolved in aqua-regia is precipitated of a purpliſh black; and in the vitriolic acid of a browniſh red black; but regulus of antimony diſſolved in aqua-regia is precipitated of a white colour. Nitrous ſolution of biſmuth let fall a ſediment at firſt white, and afterwards brown; vitriol of biſmuth and marine ſalt of biſmuth were alſo precipitated brown, the latter being rediſſolved by agitation. Nitrous ſolution of arſenic alſo became brown, but the precipitate was rediſſolved by agitation. On impregnating water with this air, without allowing the air to burn over it, the liquid ſcarcely made any alteration in tincture of litmus, nor did it precipitate lime-water; but cauſed a black precipitate in ſolution of ſilver; a white one in ſolution of regulus of antimony in aqua-regia, and a whitiſh yellow one in that of corroſive ſublimate.

On letting up a meaſure of water to this air, and through that ſome bubbles of common air, every bubble flamed, and produced a white ſmoke until about half the quantity of common air was introduced that had been uſed of phoſphoric; but without any apparent increaſe of the original bulk. The flame produced a ſmall commotion each time, and ſmoke deſcended after the inflammation into the water; the ſmoke ſtill continuing to be produced on the introduction of common air, after the flame had ceaſed. Bubbles of phoſphoric air, eſcaping through mercury into the atmoſphere, flame, crackle, and ſmell, exactly like the electric ſpark. This property of phoſphoric hepatic air was known to M. Gingembre in the year 1783.

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On letting up half a meaſure of nitrous to one of phoſphoric air, a white ſmoke appeared, with a very ſlight diminution; the tranſparency being ſoon reſtored, and a ſlight ſcum depoſited on the ſides of the jar. No ſmoke or diminution was produced by adding another half meaſure of nitrous air; but on adding water, and agitating the air in it, much more was abſorbed. On turning up the jar, the nitrous air firſt eſcaped in form of a red vapour, and this was followed by a whitiſh ſmoke. The water had a phoſphoric ſmell, and precipitated the ſolution of ſilver brown.

An equal meaſure of alkaline air ſcarce diminiſhed phoſphoric air; and on adding water, little more ſeemed to be taken up than the alkaline air, though a ſmoke appeared on turning up the jar, but without any flame. Water thus impregnated ſmelled exactly like onions, and turned the tincture of radiſhes green. Solution of ſilver was precipitated of a black colour; that of copper in the nitrous acid, of a brown; the precipitate being rediſſolved by agitation, and the liquor then aſſuming a green colour. Corroſive ſublimate let fall a yellow precipitate mixed with black. Iron was precipitated white both from the vitriolic and marine acids; but a pale yellow ſolution of it in the nitrous acid was not affected, and a red ſolution in the ſame acid was only clotted. Regulus of antimony was precipitated of a white colour from aqua-regia, cobalt of a ſlight reddiſh from the nitrous acid, and biſmuth of a brown colour from the ſame. Neither the nitrous ſolutions of lead or zinc were affected; nor thoſe of tin in the marine acid or in aqua-regia. Fixed air, mixed with an equal proportion of phoſphoric air, produced a white ſmoke, ſome diminution, and a yellow precipitate. On agitating the mixture in water the fixed air was taken up all to one-tenth; the reſiduum ſmoked, but did not take fire.

Some *precipitate per ſe* being introduced to a ſmall portion of phoſphoric air, the former ſoon grew black, and a white ſmoke appeared. In two days the precipitate became ſolid, acquiring a pale white colour, ſhining like ſteel. The air loſt its inflammability; though Mr Kirwan ſuppoſes that this might be owing to ſome other cauſe: for two days after this air was made, a yellow ſcum was obſerved on the ſides of the jar in which a quantity of it had reſted all night over water; and the ſpontaneous inflammability was loſt next morning. The temperature of the air was then 53°; and when it inflamed before 68°.

From theſe experiments our author concludes, that phoſphoric air is nothing elſe but phoſphorus itſelf in an aerial ſtate; differing from ſulphureous or hepatic air, in this, that it requires much leſs latent heat to throw it into an aerial ſtate, and therefore may be diſengaged from fixed alkalies without any acid.

Hepatic air may be obtained in a great number of different ways, and from a variety of ſubſtances. The moſt common method in which it has been procured, is by decompoſing the hepar ſulphuris or combination of ſulphur and fixed alkaline ſalt by means of an acid. Mr Kirwan has examined the circumſtances attending the formation of liver of ſulphur; making the firſt experiment by melting together equal parts of the mineral alkali and flowers of ſulphur in a covered crucible. On ſlightly heating the mixture, it emitted a bluiſh ſmoke, which gradually became whiter as the heat was augmented; and at laſt, when the bottom of the crucible became ſlightly red, the ſmoke was perfectly white and inflammable. To inveſtigate the nature of this ſmoke, a pure fixed alkali was made by deflagrating equal parts of cream of tartar and nitre in a red-hot crucible in the uſual way. This alkali, in a very dry ſtate, was mixed with a ſmall quantity of flowers of ſulphur, and the mixture diſtilled in a ſmall coated retort; the air being received over quickſilver.

On the firſt application of heat, one cubic inch and an half of ſlightly phlogiſticated air was obtained, but without any fixed air. This was the common air contained in the veſſels, but altered by being in contact with the alkali and ſulphur. On augmenting the heat, about 18 inches of air were obtained, of a reddiſh colour, ſeemingly a mixture of nitrous and common air; acting ſlightly on mercury. After this, 20 cubic inches of the ſame kind mixed with ſome fixed air were obtained. Theſe were ſucceeded by 64 inches of fixed air almoſt perfectly pure. The bottom of the retort was now red hot; ſome ſulphur was ſublimed in the neck, and when all was cold, an hepar ſulphuris was found in the bulb.

From this experiment Mr Kirwan concludes, that the blue ſmoke abovementioned conſiſts chiefly of fixed air and the white ſulphur; but that neither hepatic nor vitriolic air are formed unleſs the retort be large enough to admit as much air as is neceſſary for burning part of the ſulphur. He concludes alſo, that hepar ſulphuris will yield no hepatic air unleſs with the help of an acid; and I believe this (ſays he) to be true, when the experiment is made in the dry way, and nearly ſo in the moiſt way: for having added 200 grains of ſulphur to a concentrated ſolution of ſtrong cauſtic vegetable alkali by a ſtrong and long-continued heat, I obtained only one cubic inch of hepatic air; yet it is well known, that a ſtrong ſolution of liver of ſulphur conſtantly emits an hepatic ſmell, even in the temperature of the atmoſphere; and the ſubſtance ſo emitted contains as much hepatic air as diſcolours ſilver and lead, and even their ſolutions; which ſhows that an incomparably ſmall quantity of this air is ſufficient to produce the effect. To diſcover whether this extrication of hepatic air might be cauſed by the depoſition of fixed air from the atmoſphere, I threw ſome pulveriſed calcareous hepar into aerated water, and by the application of heat endeavoured to obtain hepatic air, but in vain: and indeed the very circumſtance that the hepatic ſmell and its effects are always ſtrongeſt the firſt inſtant that a bottle of the hepatic ſolution is opened, ſeems to indicate that fixed air is no way concerned in its production. The beſt liver of ſulphur is made of equal parts of ſalt of tartar and ſulphur; but as about one fifth of the ſalt of tartar conſiſts of air which eſcapes during the operation, it ſeems that the proportion of ſulphur predominates in the reſulting compound; yet as ſome of the ſulphur alſo ſublimes and burns, it is not eaſy to fix the exact proportion. One hundred grains of the beſt, that is to ſay the reddeſt liver of ſulphur, afford with dilute marine acid about 40 inches of hepatic air in the temperature of 60°; a quantity equivalent to about 13 grains of ſulphur, as will be ſeen in the ſequel."

Hepatic air is beſt produced by marine acid: the concentrated nitrous acid produces nitrous air; but if diluted with 20 times its bulk of water, it produces the hepatic kind by the aſſiſtance of heat. Concentrated vitriolic acid poured upon liver of ſulphur affords but little hepatic air without the aſſiſtance of heat; though it conſtantly decompoſes the hepar: "and (adds our author) it is partly for this reaſon that the proportion of air is ſo ſmall; for it is during the gradual decompoſition of ſulphureous compounds that hepatic air is produced." Hepatic air, but not in a pure ſtate, is extricated by diſtilled vinegar; its ſmell being mixed with that of the vegetable acid. Some quantity of this air is produced by the ſaccharine acid in the temperature of 59°, and by ſedative ſalt in that of boiling water or nearly ſo; but neither the arſenical nor aerial acids produce any.

Having prepared ſome hepar ſulphuris with an over proportion of ſulphur, an hepatic air was procured by means of concentrated vitriolic acid; but ſo loaded with ſulphur, that it depoſited ſome in the tube through which it was tranſmitted, and on the upper part of the glaſs receiver. On tranſferring it to another receiver, though then perfectly clear and tranſparent, in quantity about ſix cubic inches, yet next morning it was reduced to one inch, the inſide of the glaſs being covered with a thick coat of ſulphur; the ſmall quantity of elaſtic fluid which remained being changed from hepatic to vitriolic air. "Hence (ſays Mr Kirwan) it appears, firſt, that a ſpecies of elaſtic fluid may exiſt in a ſtate intermediate between the aerial and vaporous, which is not permanently elaſtic like air, nor immediately condenſed by cold like vapour; but which, by the gradual loſs of its ſpecific heat, may be reduced to a concrete form. 2. That ſo large a quantity of ſulphur may be combined with vitriolic air, as to enable it to exhibit the properties of hepatic air for ſome time at leaſt. A mixture of three parts of pulveriſed quicklime and one of ſulphur, heated to whiteneſs in a covered crucible for one hour, became of a ſtony hardneſs; and, being treated with marine acid, afforded hepatic air. On heating a piece of this ſtone in pure water, it becomes bluiſh; and hence the origin of blue marles generally found near hot ſulphurated waters. A calcareous hepar may alſo be formed in the moiſt way."

Magneſia deprived of its fixed air, and heated in the ſame manner with ſulphur, afforded no hepatic air. It was procured, however, from a mixture of three parts of iron-filings and one of ſulphur melted together, and treated with marine acid. This ſulphurated iron diſſolved in marine acid affords almoſt entirely hepatic air, and very little of the inflammable kind. Equal parts of iron filings and ſulphur mixed together, and made into a paſte with water, after heating and becoming black, afforded hepatic air when an acid was poured on it; but this was mixed with inflammable air, probably proceeding from uncombined iron. After a few days this mixture loſt its power of producing hepatic air Mr Bergman has alſo remarked, that combinations of ſulphur with ſome other metals yield hepatic air.

Hepatic air was obtained by pouring ſome olive-oil upon a few grains of ſulphur, and heating the mixture in a vial with a bent tube. It was likewiſe obtained in a great plenty from equal parts of ſulphur and powdered charcoal, out of which the air had previouſly been expelled as much as poſſible: "yet (ſays our author) it is hardly poſſible to free charcoal wholly from foreign air, for it ſoon reattracts it when expoſed to the atmoſphere."

Six grains of pyrophorus mixed with alum and ſugar efferveſced with marine acid, and afforded two cubic inches and an half of hepatic air. This pyrophorus had been made ſix years before, and was kept in a tube hermetically ſealed, and for ſeveral ſummers expoſed to the light of the ſun. It was ſo combuſtible, that ſome grains of it took fire while it was introduced into the vial out of which the hepatic air had been expelled.

A mixture of two parts of white ſugar (previouſly melted in order to free it of water) with one part of ſulphur, when heated to about 600 or 700 degrees, gave out hepatic air very rapidly. This air had a ſmell very much reſembling that of onions, but contained neither fixed air nor any other acid. Sugar and ſulphur melted together gave out no hepatic air when treated with acids. Water, ſpirit of wine, and marine acid, decompoſe this mixture, diſſolving the ſugar, and leaving the ſulphur.

Twelve grains of ſulphur heated in a retort, filled with metallic inflammable air, afforded no hepatic air; though the retort ſmelled of it when cold, and for ſome time after.

Eighteen grains of liver of ſulphur expoſed for four days to ſix cubic inches of fixed air, the thermometer at 70°, was ſomewhat whitened on the ſurface; the air not having an hepatic ſmell, but rather that of bread. It ſeemed to have taken up ſome ſulphur, which was ſeparated by lime-water. It was not in the leaſt diminiſhed; and therefore ſeems to have received an addition of hepatic air, or rather of ſulphur.

On expoſing a quantity of ſulphureo-martial paſte to fixed air for five days, the latter was not at all diminiſhed, but received a ſlight addition of inflammable air. The paſte itſelf, taken out of this air and expoſed to the atmoſphere, heated very ſtrongly.

Three grains of ſulphur expoſed to twelve inches of marine air was not diminiſhed in four days. On adding a cubic inch of water to this air, it was all abſorbed to one inch, which had an hepatic ſmell, as had alſo the water, the latter evidently containing ſulphur.

Hepatic air is found naturally in coal-pits, and has been diſcovered by Mr Bergman to be the principle on which the ſulphureous properties of many mineral waters depend. There is alſo great reaſon to think that it is the peculiar production of the putrefaction of many, if not all, animal ſubſtances. Rotten eggs and corrupted water are known to emit this ſpecies of air, and alſo to diſcolour metallic ſubſtances, in the ſame manner. M. Vieliard has lately diſcovered ſeveral other indications of this air in putrefied blood. In the 80th volume of Philoſophical Tranſactions, p. 391. Dr Crawford gives an account of ſome experiments, from which it appears, that a kind of hepatic air is contained in the virus of cancers. Having obtained a portion of this ichor from a cancerous breaſt, he divided it into three parts, which were put into ſeparate vials after being properly diluted with water. To one of theſe he added ſome vegetable fixed alkali, to another a little concentrated vitriolic acid, and to the third ſome ſyrup of violets. No change was produced by the vegetable alkali; but on the addition of the acid, a deep brown colour was produced, and a briſk efferveſcence took place at the ſame time that the peculiar odour of the cancerous matter was greatly augmented, and diffuſed itſelf to a conſiderable diſtance. A faint green colour was communicated to the third portion which had the ſyrup of violets.

As the cancerous matter on which theſe experiments were made had been previouſly kept ſome days, Dr Crawford ſuſpected that it might thus have acquired its alkaline property: as Mr Geber has ſhown, that animal ſubſtances, when newly putrefied, do not contain any alkali. He repeated the experiment, therefore on ſome matter recently produced from a cancerous penis. A manifeſt efferveſcence, though leſs than the foregoing, alſo took place in this caſe; the liquor acquired a brown colour, and the fetor increaſed. A portion of the ſame matter, diffuſed through diſtilled water, communicated a green colour as before; but in ſome caſes the change was ſcarcely perceptible, though in all the experiments which were made the exiſtence of an alkali one way or other was manifeſted.

The air extricated from the cancerous matter ſeemed by its ſmell to reſemble rotten eggs more than any other ſpecies; but to inveſtigate the matter fully, ſome portion of the virus was diffuſed through diſtilled water, the liquor filtered, and a ſmall quantity of nitrous ſolution of ſilver dropped into it. An aſh-coloured precipitate ſoon appeared diffuſed like a cloud through the liquid, and at the end of two hours the colour of the mixture was changed to a deep brown. The fetid ſmell was now rendered much fainter, and was entirely deſtroyed by an addition of concentrated nitrous acid, or by dephlogiſticated ſpirit of ſalt; either of which ſubſtances would alſo have deſtroyed the ſmell of hepatic air.

On adding the vitriolic acid to common pus, no efferveſcence was produced, nor was the colour of the liquor changed, neither did any ſenſible precipitation take place for ſeveral hours. On repeating the experiment, however, with matter obtained from a venereal bubo, the liquid became ſlightly turbid on the addition of nitrated ſilver, and at the end of two hours it had acquired a browniſh caſt. The ſame effects took place with the matter which iſſued from a carious bone; but in both caſes the precipitation was much leſs than with the cancerous matter.

To procure ſome quantity of the air in its ſeparate ſtate, a quantity of reddiſh cancerous matter was mixed with about thrice its weight of diſtilled water. On adding a little vitriolic acid to this mixture, an efferveſcence enſued, and the air was received in a vial over mercury. When one-half of the mercury was expelled from the vial, the latter was inverted over diſtilled water; and the portion of mercury that remained in it being ſuffered to deſcend, and the water to riſe into its place, the vial was cloſely corked. The air and water were then briſkly agitated together; and the vial being a ſecond time inverted over diſtilled water, the cork was removed. It now appeared, by the height to which the water roſe, that part of the air had been abſorbed; and on dropping in a little nitrated ſilver into it, a purpliſh cloud, inclining to red, was produced. In this experiment, the change of colour was at firſt ſcarcely perceptible, but became very diſtinct in a few minutes. The quantity of aerial fluid, however, which can thus be extricated by the addition of acid without heat is not very conſiderable: if heat be applied, a larger quantity of elaſtic fluid will be produced, having the ſmell of cancerous matter; but in that caſe it will be mixed with vitriolic acid air.

To obtain this air in as pure a ſtate as poſſible, a portion of the cancerous virus, properly diluted with diſtilled water, was introduced into a ſmall vial, a little vitriolic acid added, the veſſel filled with diſtilled water, and a crooked tube alſo filled with water fitted to its neck. The extremity of the tube being then introduced into the neck of a bottle inverted in water, and the flame of a candle applied to the bottom of the vial, air began to riſe in white bubbles, having a very fetid ſmell ſimilar to that of cancerous matter; and the water impregnated with it occaſioned a dark brown precipitate in a ſolution of nitrated ſilver. On ſeparating the crooked tube from the vial, a very offenſive white vapour, reſembling in ſmell the air produced in the foregoing experiment, aroſe from the mixture, and continued to aſcend for near half an hour. A portion of the liquor filtered, and mixed with a little concentrated nitrous acid, had its ſmell entirely deſtroyed; a ſlight efferveſcence being produced, and a flaky ſubſtance ſeparated from the liquor and floating through it.

On examining the alkaline matter which had been ſeparated from the cancerous virus, it was found, as had indeed been concluded *à priori*, to be the volatile alkali. It ſeemed probable that this alkali was united to the fixed air with which the cancerous matter was impregnated, becauſe the peculiar ſmell of the matter was greatly augmented by the addition of the vitriolic acid; and this was confirmed by the following experiments.

1. A portion of cancerous matter was diffuſed through diſtilled water, and diſtilled in a ſmall retort with a graduated heat until the bottom of the veſſel became red hot. The common air, which firſt came over, was greatly impregnated with the ſmell of the cancerous matter: however, its qualities were not greatly impaired by the teſt of nitrous air; two meaſures of it, with one of nitrous air, occupying the ſpace of little leſs than two meaſures. When the water began to boil, a large quantity of aqueous vapour aroſe; which, as ſoon as it came into contact with the air, produced a white ſmoke. The ſmell was now perceived to be ſimilar to that of boiled animal ſubſtances: but no permanently elaſtic fluid was mixed with the aqueous vapour. When the greater part of the water was evaporated the jar containing the firſt portion of air was removed, and the neck of the retort introduced beneath an inverted veſſel filled with mercury. A conſiderable quantity of air ſmelling like burnt bones was now extricated, which was mixed with a yellow empyreumatic oil. On agitating ſome of it with water, part of the air was imbibed. Nitrated ſilver, dropped into the water thus impregnated, produced a reddiſh precipitate.

2. One meaſure of the air obtained in the foregoing experiment was mixed with an equal quantity of alkaline air. In three hours the whole occupied only the bulk of one meaſure and two-tenths, and an oily ſcum was now left upon the inner ſurface of the tube; and in eight days the interior ſurface of the tube was covered with ſlender films of a yellowiſh colour ſpread irregularly upon it. The upper ſurface of the mercury within the tube was corroded; in ſome places having a reddiſh burniſhed appearance, in others it was changed into an aſh-coloured powder interſperſed with brown ſpots. On removing the tube from the mercury, the air that remained in it had a ſtrong fetid ſmell, reſembling that of burned bones.

3. To diſcover whether other animal ſubſtances yield an aerial fluid ſimilar to that produced from the cancerous virus, a portion of the fleſh of the neck of a chicken was diſtilled in a ſmall coated glaſs-retort till it became red hot. A thin phlegm of a yellowiſh colour firſt came over: this was ſucceeded by a yellow empyreumatic oil; and at the ſame time a permanently elaſtic fluid, ſmelling like burned feathers, began to be diſengaged. A ſlip of paper tinged with litmus, and reddened by acetous acid, being held over this fluid, preſently became blue. The remainder of the air was very fetid, and highly inflammable. By agitation in water one-half of it was abſorbed; the remainder was inflammable, and burned firſt with a ſlight exploſion, and afterwards with a blue lambent flame. On dropping a nitrous ſolution of ſilver into the water impregnated with this air, the mixture depoſited a brown precipitate.

4. On treating putrid veal by diſtillation with a graduated heat, the products were found to be nearly ſimilar to thoſe already mentioned. The air obtained was highly inflammable, about one-half of it was abſorbed by water; and the liquid thus impregnated let fall a brown precipitate on the addition of nitrous ſolution of ſilver. On adding ſome dephlogiſticated marine acid to another portion of this liquor, a briſk efferveſcence took place and a whitiſh gelatinous matter was ſeparated; and this ſubſtance being evaporated to dryneſs, became black on the addition of the concentrated vitriolic acid. On agitation with water, part of the air was abſorbed as in the former experiment, and the remainder burned with a lambent flame. This air, however, extricated from putrid veal, had leſs of an empyreumatic ſmell than that which was diſengaged from freſh animal ſubſtances being rather like that of putrefying animal matters.

From theſe experiments our author concludes that the air extracted from animal ſubſtances conſiſts of two diſtinct fluids, the one ſoluble and the other inſoluble in water. The inſoluble part burns with a lambent flame, and has all the characters of heavy inflammable air; but the ſoluble part reſembles that which is produced from cancerous matter by the vitriolic acid; having a fetid odour decompoſing nitrated ſilver, combining with cauſtic volatile alkali, and poſſeſſing many of the properties of common hepatic air. In many particulars, however, the animal hepatic air differs from the common. The ſmell is conſiderably different, and in the decompoſition of animal hepatic air no ſulphur is ſeparated: but a kind of flaky matter which is evidently an animal ſubſtance, as turning black by the vitriolic acid. The following experiment is a deciſive

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proof that no ſulphur is contained in animal hepatic air. "Equal parts of pure air, and of air extricated from freſh beef by diſtillation, were fired by the electric ſhock in a ſtrong glaſs tube, over mercury. A little diſtilled water was then introduced through the mercury into the tube, and was agitated with the air which it contained. A portion of this water being filtered, and a ſmall quantity of muriated barytes being dropped into it, the mixture remained perfectly tranſparent. Hence it appears, that the air extricated by diſtillation from freſh beef does not contain ſulphur, as that ſubſtance would have been changed by burning into the vitriolic acid, and the muriated barytes would have been decompoſed. The ſame experiment was frequently repeated with air extricated by diſtillation from the putrid as well as from the freſh muſcular fibres of animals; but in no inſtance could the leaſt veſtige of vitriolic acid be diſcovered.

5. To analyſe in a more perfect manner theſe kinds of animal airs, and to determine their products when combined with pure air, about an ounce of the lean of freſh mutton was expoſed to a red heat in a ſmall coated glaſs retort. Very near one half of the air produced towards the end was abſorbed by water, and two-thirds of that which came over about the middle. A ſeparate portion of the air, diſengaged towards the end of the diſtillation, being allowed to remain over mercury for ſeven hours, it was found gradually to diminiſh in bulk; and a fluid, having the colour and ſmell of a thin empyreumatic oil, was collected at the bottom of the jar. This appearance, however, is not conſtant: the air, when placed over mercury, ſometimes diminiſhes, and at other times retains its original bulk. Only one eighth part of this air was abſorbed by water. "Hence (ſays the Doctor) it appears, that a portion of the air extricated from animal ſubſtances by heat, reſembles a ſpecies of hepatic air which was firſt diſcovered by Mr Kirwan, and which exiſts in an intermediate ſtate between the aerial and the vaporous; this fluid not being permanently elaſtic like air, nor immediately condenſed by cold like vapour, but gradually aſſuming the nonelaſtic form, in conſequence probably of the tendency of its ſeveral parts to unite with one another."

6. To determine the proportion of fixed air contained in that produced from the lean of animal ſubſtances, a quantity of air extracted from mutton was received over mercury in a large vial with a narrow neck. When the vial was little more than half filled, the remaining portion of the mercury was diſplaced by introducing water that had been previouſly boiled. The vial being then cloſely corked, the air and water were briſkly agitated together; and the liquor, thus impregnated with the ſoluble part of the animal air, was put into a vial, to the bottom of which heat was applied. Thus a part of the air was again diſengaged, and received in a tube inverted over mercury; and the proceſs continued till the liquor no longer rendered lime-water turbid. On agitating the air a ſecond time with water and comparing the bulk after agitation with that before it, it appeared that the quantity abſorbed was about one-fourth part. From this experiment alſo it appeared, that animal hepatic air, when once abſorbed by water, is not capable of being again diſengaged by a boiling heat; for after the fixed air had all been expelled, the liquor was made to boil nearly for half an hour, but no permanently elaſtic fluid could be diſengaged; that portion of the liquor which remained had a faint yellow colour and ſmelled ſtrongly of animal hepatic air, depoſiting alſo a brown precipitate upon the addition of nitrated ſilver. "It appears therefore (ſays the Doctor), that the ſoluble part of the air diſengaged from animal ſubſtances by heat, conſiſts of three diſtinct fluids; of alkaline air, fixed, and animal hepatic air. It ſeemed extremely probable, that theſe three aerial fluids, ſlowly combining together, formed the oily empyreumatic ſubſtance which was collected at the bottom of the jar, while the air was undergoing the diminution deſcribed above. In this concluſion I was confirmed by trials that were made with the empyreumatic oil that came over in the latter part of the diſtillation; for when it was examined by chemical teſts ſoon after it was obtained, it was found to contain fixed air, volatile alkali, and animal hepatic air."

7. To determine the products reſulting from the combuſtion of pure air with the animal hepatic air, one portion of the air extracted from the lean of mutton was agitated with water, the other was not. One meaſure of the former was introduced over mercury into a ſtrong glaſs tube, and then mixed with one meaſure and an half of pure air. A ſmall ſhock being made to paſs through it, a violent exploſion took place; and the ſpace occupied by the air in the tube was reduced from an inch and two tenths to nine tenths of an inch. On agitating the reſiduum with water, ſix tenths were abſorbed, and the portion abſorbed appeared to be fixed air by its precipitating lime water. Five parts of nitrous air being mixed with an equal quantity of the inſoluble reſiduum, a diminution of three parts took place; whence it appears that one fifth of the inſoluble reſiduum was pure air. Hence it appears that fixed air was produced by the inflammation of dephlogiſticated and animal hepatic air.

8. One meaſure of that portion of animal air which had not been agitated with water was mixed with a meaſure and an half of pure air, and fired by the electric ſhock. Previous to the deflagration, the two airs occupied the ſpace of 1.15 inches, but afterwards it was reduced to 1.1. On agitation with water about one third was abſorbed; a portion of the inſoluble reſiduum burned with a faint blue flame.

9. As it appeared from theſe experiments, that a meaſure and an half of dephlogiſticated air was not ſufficient to ſaturate one of the animal air that had not been agitated with water, the experiment was repeated in the following manner. Two parts of pure air, with one of the animal kind, occupied the ſpace of eight tenths of an inch, but when fired by the electric ſhock, the reſiduum ſtood at a little leſs than half an inch; and this reſiduum was almoſt wholly abſorbed on agitation with lime-water. By a ſubſequent trial it was found, that nearly one-half of the animal air uſed in this experiment was ſoluble in water. When equal parts of pure and animal air were burned together, a conſiderable increaſe of bulk almoſt invariably took place; and when the animal was to the pure air as 21 to 15, the bulk of the mixture was increaſed one half. The reſiduum of the air was inflammable.

10. To inveſtigate the cauſe of this augmentation

Hepatic Air.

of bulk, three meaſures of animal were mixed with two of pure air; and ſeveral ſtrong electric ſhocks were made to paſs through the mixture, but without being able to ſet it on fire. On adding half a meaſure more of pure air, it took fire; and the bulk was augmented from .9 to 1.3 inches. Three meaſures of the reſiduum were then mixed with three of pure air, and the mixture fired by the electric ſhock; the bulk of the mixture being reduced from one inch to .56. On agitation with lime-water, two-thirds were abſorbed, and the remainder conſiſted almoſt entirely of pure air.

11. Having accidentally taken two or three ſmall ſhocks through ſome alkaline air, and not obſerving any ſenſible increaſe of bulk, the Doctor mixed it with an equal quantity of pure air, not apprehending that any decompoſition had taken place. Contrary to expectation, however, the two fluids entered rapidly into combination with each other the moment that the electric ſhock was made to paſs through them. The jar, which he held looſely in his hand, as it was inverted over the jar, was carried obliquely upward with great violence; the ſtand of the prime conductor was broken, and the cylinder ſhivered into a thouſand pieces. The experiment, however, was afterwards ſafely repeated with a very ſtrong apparatus; the jar being preſſed down with a plate of iron for the purpoſe of retaining it in its place.

"It appeared (ſays the Doctor), that when the alkaline and pure air were immediately mixed together, and a ſmall ſhock was made to paſs through them, they would not take fire; but when three or four ſhocks were previouſly taken through the alkaline air, and the latter was afterwards mixed with an equal quantity of pure air, they exploded with great violence. One-ſixth of the reſiduum was alkaline, the remainder phlogiſticated air."

Several other experiments are related by the Doctor in this paper, which tend to ſhow that animal hepatic air is extricated in large quantity by the proceſs of putrefaction. By diſtilling a green cabbage leaf, he alſo obtained an aerial fluid, in moſt of its properties reſembling animal hepatic air. The fetid ſmell of this gas is deſtroyed by ſuffering it to remain in contact with pure air for ſeveral weeks; and ſo effectually by the vapour of dephlogiſticated marine acid, that he was induced to try the efficacy of this fluid as an application to cancers. In ſome caſes it appeared to be of ſervice, though ſome ulcerated cancers were found ſo irritable, that they could bear no application whatever. The liquid itſelf appears to be unſafe when taken inwardly. Dr Crawford having taken 20 drops of it largely diluted with water, found himſelf affected with an obtuſe pain and ſenſe of conſtriction in his ſtomach and bowels, which reſiſted the uſe of emetics and laxatives, but yielded to ſulphureous water. He found afterwards, that the mangneſe which had been uſed in the diſtillation of the acid, contained a ſmall quantity of lead. He relates alſo, on the authority of Dr Ingenhouſz, that a Dutchman of his acquaintance ſome time ago drank a conſiderable quantity of the dephlogiſticated marine acid; the effects it produced were ſo violent, that he narrowly eſcaped with his life. Theſe deleterious qualities our author aſcribes to lead; though it can by no means be proved that manganeſe is more innocent: and it is alſo exceedingly probable that ſome of this ſemimetal riſes in the preparation of what is called the *dephlogiſticated* or *oxygenated* marine acid.

Hepatica ‖ Heptagonal.

Hepatic Aloes, the inſpiſſated juice of a ſpecies of Aloe.

Hepatic Stone. See *Liver Stone.*

Hepatic Water. See *Hepar Sulphuris.*

HEPATICA, in botany, a ſpecies of Anemone.

HEPATITIS, in medicine, an inflammation of the liver. See Medicine *Index.*

HEPATOSCOPIA (formed of ηπαρ *liver*, and σκεπτω *I conſider*), in antiquity, a ſpecies of divination, wherein predictions were made by inſpecting the livers of animals.

Hepatoscopia is alſo uſed as a general name for divination by intrails.

HEPHÆSTIA, in Grecian antiquity, an Athenian feſtival in honour of Vulcan, the chief ceremony of which was a race with torches. It was performed in this manner: The antagoniſts were three young men, one of whom, by lot, took a lighted torch in his hand, and began his courſe; if the torch was extinguiſhed before he finiſhed the race, he delivered it to the ſecond; and he in like manner to the third: the victory was his who firſt carried the torch lighted to the end of the race: and to this ſucceſſive delivering of the torch we find many alluſions in ancient writers.

HEPHTHEMIMERIS (compoſed of επτα *ſeven*, ημισους *half*, and μερος *part*), in the Greek and Latin poetry, a ſort of verſe conſiſting of three feet and a ſyllable; that is, of ſeven half feet.

Such are moſt of the verſes in Anacreon:

Θελω | λεγειν | Ατρει | δας
Θελω | δε Καδ | μεν α | δειν, &c,

And that of Ariſtophanes, in his Plutus:

Επεσθε μητρι χοιροι.

They are alſo called *trimetri catalectici.*

Hephthemimeris, or *Hephthemimeres*, is alſo a cæſura after the third foot; that is, on the ſeventh half foot. It is a rule, that this ſyllable, though it be ſhort in itſelf, muſt be made long on account of the cæſura, or to make it an *hepthemimeris.* As in that verſe of Virgil.

Et furiis agitatus amor, et conſcia virtus,

It may be added that the cæſura, is not to be on the fifth foot, as it is in the verſe which Dr Harris gives us for an example:

Ille latus niveum molli fultus Hyacintho.

This is not a hepthemimeris cæſura, but a henneamimeris, *i. e.* of nine half feet.

HEPTACHORD, in the ancient poetry, ſignified verſes that were ſung or played on ſeven chords, that is, on ſeven different notes. In this ſenſe it was applied to the lyre when it had but ſeven ſtrings. One of the intervals is alſo called an *heptachord*, as containing the ſame number of degrees between the extremes.

HEPTAGON, in geometry, a figure conſiſting of ſeven ſides, and as many angles. In fortification, a place is termed an *heptagon*, that has ſeven baſtions for its defence.

HEPTAGONAL, numbers, in arithmetic, a ſort of polygonal numbers, wherein the difference of the terms of the correſponding arithmetical progreſſion is

5. One of the properties of theſe numbers is, that if they be multiplied by 40, and 9 be added to the product, the ſum will be a ſquare number.

HEPTANDRIA, in botany (from επτα *ſeptem*, and ανηρ *a man*); the ſeventh claſs in Linnæus's ſexual method, conſiſting of plants with hermaphrodite flowers, which have ſeven ſtamina or male-organs. The orders are four, derived from the number of ſtyles or female-organs.

HEPTANGULAR, in geometry, an appellation given to figures which have ſeven angles.

HEPTARCHY (compounded of the Greek επτα, "ſeven," and αρχη, *imperium*, "government"), a government compoſed of ſeven perſons, or a country governed by ſeven perſons, or divided into ſeven kingdoms.

The Saxon heptarchy included all England, which was cantoned out into ſeven petty independent kingdoms, peopled and governed by different clans and colonies; *viz.* thoſe of Kent, the South Saxons, Weſt Saxons, Eaſt Saxons, Northumberland, the Eaſt Angles, and Mercia. The heptarchy was formed by degrees from the year 455, when firſt the kingdom of Kent was erected, and Hengiſt aſſumed the title of king of Kent immediately after the battle of Eglesford; and it terminated in 827 or 828, when king Egbert reunited them into one, made the heptarchy into a monarchy, and aſſumed the title of king of England. It muſt be obſerved, however, that though Egbert became monarch of England, he was not perfectly abſolute. The kingdom which he actually poſſeſſed conſiſted of the ancient kingdoms of Weſſex, Suſſex, Kent, and Eſſex, that had been peopled by Saxons and Jutes. As for the other three kingdoms, whoſe inhabitants were Angles, he contented himſelf with preſerving the ſovereignty over them, permitting them to be governed by kings who were his vaſſals and tributaries.

The government of the heptarchy, reckoning from the founding of the kingdom of Mercia, the laſt of the ſeven Anglo-Saxon kingdoms, laſted 243 years; but if the time ſpent by the Saxons in their conqueſts from the arrival of Hengiſt in 449 be added, the heptarchy will be found to have laſted 378 years from its commencement to its diſſolution. The cauſes of the diſſolution of the heptarchy were the great inequality among the ſeven kingdoms, three of which greatly ſurpaſſed the others in extent and power; the default of male heirs in the royal families of all the kingdoms, that of Weſſex excepted; and the concurrence of various circumſtances which combined in the time of Egbert.

HERACLEA, an ancient city of Turkey in Europe and in Romania, with the ſee of an archbiſhop of the Grecian Church, and a ſea-port. It was a very famous place in former times, and there are ſtill ſome remains of its ancient ſplendor. Theodore Laſcaris took it from David Comnenus, emperor of Trebiſond; when it fell into the hands of the Genoeſe, but Mahomet II. took it from them; ſince which time it has been in the poſſeſſion of the Turks. It is near the ſea. E. Long. 27. 48. N. Lat. 40. 27.

HERACLEONITES, a ſect of Chriſtians, the followers of Heracleon, who refined upon the Gnoſtic divinity, and maintained that the world was not the immediate production of the ſon of God, but that he was only the occaſional cauſe of its being created by the demiurgus. The Heracleonites denied the authority of the prophecies of the old Teſtament, maintaining that they were mere random ſounds in the air; and that St John the Baptiſt was the only true voice that directed to the Meſſiah.

HERACLEUM, MADNESS: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 45th order, *Umbellatæ*. The fruit is elliptical, emarginated, compreſſed, and ſtriated, with a thin border. The corolla is difform, inflexed, and emarginated; the involucrum dropping off. There are five ſpecies, of which the moſt remarkable is the ſpondylium, or cowparſnip. This is common in many parts of Britain, and other northern parts of Europe and Aſia.—Gmelin, in his *Flora Siberica*, p. 214. tells us, that the inhabitants of Kamſchatka, about the beginning of July, collect the foot-ſtalks of the radical leaves of this plant, and after peeling off the rhind, dry them ſeparately in the ſun, and then, tying them in bundles, dry them carefully in the ſhade: in a ſhort time afterwards, theſe dried ſtalks are covered over with a yellow ſaccharine effloreſcence, taſting like liquorice: and in this ſtate they are eaten as a great delicacy.—The Ruſſians not only eat the ſtalks thus prepared, but procure from them a very intoxicating ſpirit. They firſt ferment them in water with the greater bilberries (*vaccinium uliginoſum*), and then diſtil the liquor to what degree of ſtrength they pleaſe; which Gmelin ſays is more agreeable to the taſte than ſpirits made from corn. This may therefore prove a good ſuccedaneum for whiſky, and prevent the conſumption of much barley, which ought to be applied to better purpoſes.—Swine and rabbits are very fond of this plant. In the county of Norfolk it is called *hog-weed.*

HERACLIDÆ, the deſcendants of Hercules, greatly celebrated in ancient hiſtory. Hercules at his death left to his ſon Hyllus all the rights and demands which he had upon the Peloponneſus, and permitted him to marry Iole as ſoon as he came of age. The poſterity of Hercules were not more kindly treated by Euriſtheus than their father had been, and they were obliged to retire for protection to the court of Ceyx, king of Trachinia. Euriſtheus purſued them thither; and Ceyx, afraid of his reſentment, begged the Heraclidæ to depart from his dominions. From Trachinia they came to Athens, where Theſeus the king of the country, who had accompanied their father in ſome of his expeditions, received them with great humanity, and aſſiſted them againſt their common enemy Euriſtheus. Euriſtheus was killed by the hand of Hyllus himſelf, and his children periſhed with him, and all the cities of the Peloponneſus became the undiſputed property of the Heraclidæ. Their triumph, however, was ſhort; their numbers were leſſened by a peſtilence; and the oracle informed them, that they had taken poſſeſſion of the Peloponneſus before the gods permitted their return. Upon this they abandoned Peloponneſus, and came to ſettle in the territories of the Athenians, where Hyllus, obedient to his father's commands, married Iole the daughter of Eurytus. Soon after he conſulted the oracle, anxious to recover the Peloponneſus; and the ambiguity of the anſwer determined him to make a ſecond attempt. He challenged to ſingle combat Atreus, the ſucceſſor of Euriſtheus on the throne of Mycenæ;

Heraclides, Heraclitus.

cenæ; and it was mutually agreed that the undiſturbed poſſeſſion of the Peloponneſus ſhould be ceded to whoſoever defeated his adverſary. Echemus accepted the challenge of Atreus, and Hyllus was killed, and the Heraclidæ a ſecond time departed from Peloponneſus. Cleodæus the ſon of Hyllus made a third attempt, and was equally unſucceſsful; and his ſon Ariſtomachus ſome time after met with the ſame unfavourable reception, and periſhed in the field of battle. Ariſtodemus, Temenus, and Chreſphontes, the three ſons of Ariſtomachus, encouraged by the more expreſſive word of an oracle, and deſirous to revenge the death of their progenitors, aſſembled a numerous force, and with a fleet invaded all Peloponneſus. Their expedition was attended with much ſucceſs; and after ſome deciſive battles, they became maſters of all the peninſula. The recovery of the Peloponneſus by the deſcendants of Hercules forms an intereſting epoch in ancient hiſtory, which is univerſally believed to have happened 80 years after the Trojan war, or 1190 years before the Chriſtian æra. This conqueſt was totally atchieved about 120 years after the firſt attempt of Hyllus, who was killed about 20 years before the Trojan war. As it occaſioned a world of changes and revolutions in the affairs of Greece, inſomuch that ſcarce a ſtate or people but were turned upſide down thereby, the return of the Heraclidæ is the epocha of the beginning of profane hiſtory: all the time that preceded it is reputed fabulous. Accordingly, Ephorus, Cumanus, Caliſthenes, and Theopompus, only begin their hiſtories from hence.

HERACLIDES *of* Pontus, a Greek philoſopher, the diſciple of Speuſippus, and afterwards of Ariſtotle, flouriſhed about 336 B. C. His vanity prompted him to deſire one of his friends to put a ſerpent into his bed juſt as he was dead, in order to raiſe a belief that he was aſcended to the heavens among the gods; but the cheat was diſcovered. All his works are loſt.

HERACLITUS, a famous Epheſian philoſopher, who flouriſhed about the 69th Olympiad, in the time of Darius Hyſtaſpes. He is ſaid to have continually bewailed the wicked lives of men, and, as often as he came among them, to have fallen a-weeping; contrary to Democritus, who made the follies of mankind a ſubject of laughter. He retired to the temple of Diana, and played at dice with the boys there; ſaying to the Epheſians who gathered round him, "Worſt of men, what do ye wonder at? Is it not better to do thus than to govern you?" Darius wrote to this philoſopher to come and live with him; but he refuſed the offer: at laſt, out of hatred to mankind, he retired to the mountains, where he contracted a dropſy by living on herbs, which deſtroyed him at 60 years of age. His writings gained him ſo great reputation, that his followers were called *Heraclitians.* Laertius ſpeaks of a treatiſe upon nature, divided into three books, one concerning the univerſe, the ſecond political, the third theological. This book he depoſited in the temple of Diana; and it is ſaid, that he affected to write obſcurely, leſt it ſhould be read by the vulgar, and become contemptible. The fundamental doctrine of his philoſophy was, that fire is the principle of all things; and the ancient philoſophers have collected and preſerved admirable apophthegms of this philoſopher.

Heraclius, Herald.

HERACLIUS, emperor of the eaſt, a renowned warrior, died A. D. 641. He carried on long and bloody wars with the Saracens, by whom he was almoſt always defeated. See Arabia, nº 67—93.

HERALD, ſays Verſtegan, is derived from the Saxon word *Herehault*, and by abbreviation *Herait*, which in that language ſignifies the champion of an army; and growing to be a name of office, it was given to him who, in the army, had the ſpecial charge to denounce war, to challenge to battle and combat, to proclaim peace, and to execute martial meſſages. But the buſineſs of heralds in Britain is as follows, viz. To marſhal, order, and conduct all royal cavalcades, ceremonies at coronations, royal marriages, inſtallations, creations of dukes, marquiſes, earls, viſcounts, barons, baronets, and dubbing of knights; embaſſies, funeral proceſſions, declarations of war, proclamations of peace, &c.: To record and blazon the arms of the nobility and gentry; and to regulate any abuſes therein through the Engliſh dominions, under the authority of the Earl Marſhal, to whom they are ſubſervient. The office of Windſor, Cheſter, Richmond, Somerſet, York, and Lancaſter-heralds, is to be aſſiſtants to the kings at arms, in the different branches of their office; and they are ſuperior to each other, according to creation, in the above order.

Heralds were formerly held in much greater eſteem than they are at preſent; and were created and chriſtened by the king, who, pouring a gold-cup of wine on their head, gave them the herald-name: but this is now done by the earl-marſhal. They could not arrive at the dignity of herald without having been ſeven years purſuivant; nor could they quit the office of herald, but to be made king at arms.

Richard III. was the firſt who formed them, in England, into a college; and afterwards great privileges were granted them by Edward VI. and Philip and Mary.

The origin of heralds is very ancient. Stentor is repreſented by Homer as herald of the Greeks, who had a voice louder than 50 men together. The Greeks called them κερυκες, and εἰρηνοφυλακες; and the Romans, *feciales*. The Romans had a college of heralds, appointed to decide whether a war were juſt or unjuſt; and to prevent its coming to open hoſtilities, till all means had been attempted for deciding the difference in a pacific way.

HERALDRY,

A Science which teaches how to blazon or explain in proper terms, all that belongs to coats-of-arms; and how to marſhal, or diſpoſe regularly, divers arms on a field. It alſo teaches whatever relates to the marſhalling of ſolemn cavalcades, proceſſions, and other public ceremonies at coronations, inſtallations, creations of peers, nuptials, chriſtening of princes, funerals, &c.

Definition, origin, &c. of Heraldry.

Arms, or coats of arms, are hereditary marks of honour, made up of fixed and determined colours and figures, granted by ſovereign princes, as a reward for military valour, a ſhining virtue, or a ſignal public ſervice; and which ſerve to denote the deſcent and alliance of the bearer, or to diſtinguiſh ſtates, cities, ſocieties, &c. civil, eccleſiaſtical, and military.

Thus heraldry is the ſcience, of which *arms* are the proper object; but yet they differ much both in their origin and antiquity. Heraldry, according to Sir George Mackenzie, "as digeſted into an art, and ſubjected to rules, muſt be aſcribed to Charlemaign and Frederick Barbaroſſa, for it did begin and grow with the feudal law." Sir John Ferne is of opinion, that we did borrow arms from the Egyptians; meaning, from their hieroglyphicks. Sir William Dugdale mentions, that arms, as marks of honour, were firſt uſed by great commanders in war, neceſſity requiring that their perſons ſhould be notified to their friends and followers. The learned Alexander Niſbet, in his excellent ſyſtem of heraldry, ſays, that arms owe their riſe and beginning to the light of nature, and that ſigns and marks of honour were made uſe of in the firſt ages of the world, and by all nations, however ſimple and illiterate, to diſtinguiſh the noble from the ignoble. We find in Homer, Virgil, and Ovid, that their heroes had divers figures on their ſhields, whereby their perſons were diſtinctly known. Alexander the Great, deſirous to honour thoſe of his captains and ſoldiers who had done any glorious action, and alſo to excite an emulation among the reſt, did grant them certain badges to be borne on their armour, pennons, and banners; ordering, at the ſame time, that no perſon or potentate, through his empire, ſhould attempt or preſume to give or tolerate the bearing of thoſe ſigns upon the armour of any man, but it ſhould be a power reſerved to himſelf; which prerogative has been claimed ever ſince by all other kings and ſovereign princes within their dominions.

After theſe and many other different opinions, all that can be ſaid with any certainty is, that in all ages, men have made uſe of figures of living creatures, or ſymbolical ſigns, to denote the bravery and courage either of their chief or nation, to render themſelves the more terrible to their enemies, and even to diſtinguiſh themſelves or families, as names do individuals. The famous C. Agrippa, in his treatiſe of the vanity of ſciences, cap. 81. has collected many inſtances of theſe marks of diſtinction, anciently borne by kingdoms and ſtates that were any way civilized, viz.

The Egyptians	bore	an Ox,
The Athenians		an Owl,
The Goths		a Bear
The Romans		an Eagle,
The Franks		a Lion,
The Saxons		a Horſe

Hereditary arms, &c.

The laſt is ſtill borne in the arms of his preſent Britannic majeſty. As to hereditary arms of families, William Cambden, Sir Henry Spelman, and other judicious heralds, agree, that they began no ſooner than towards the latter end of the 11th century. According to Father Meneſtrier's opinion, a French writer whoſe authority is of great weight in this matter, Henry l'Oiſeleur (the Falconer) who was raiſed to the imperial throne of the Weſt in 920, by regulating tournaments in Germany, gave occaſion to the eſtabliſhment of family-arms, or hereditary marks of honour, which undeniably are more ancient and better obſerved among the Germans than in any other nation. Moreover, this laſt author aſſerts, that with tournaments firſt came up coats-of-arms; which were a ſort of livery made up of ſeveral liſts, fillets, or narrow pieces of ſtuff of divers colours, from whence came the feſs, the bend, the pale, &c. which were the original charges of family-arms; for they who never had been at tournaments, had not ſuch marks of diſtinction. They who inliſted themſelves in the Croiſades, took up alſo ſeveral new figures hitherto unknown in the armorial enſigns; ſuch as alerions, bezants, eſcalop-ſhells, martlets, &c. but more particularly croſſes, of different colours for diſtinction's ſake. From this it may be concluded, that heraldry, like moſt human inventions, was inſenſibly introduced and eſtabliſhed; and that, after having been rude and unſettled for many ages, it was at laſt methodiſed, perfected, and fixed, by the Croiſades and tournaments.

Theſe marks of colour are called *arms*, from their being principally and firſt worn by military men at war and tournaments, who had them engraved, emboſſed, or depicted on ſhields, targets, banners, or other martial inſtruments. They are alſo called *coats-of-arms*, from the cuſtom of the ancients embroidering them on the coats they wore over their arms, as heralds do to this day.

Arms are diſtinguiſhed by different names, to denote the cauſes of their bearing; ſuch as,

ARMS

Of Dominion,
Of Pretenſion,
Of Conceſſion,
Of Community,
Of Patronage,
Of Family,
Of Alliance,
Of Succeſſion.

Arms of *dominion* or ſovereignty are thoſe which emperors, kings, and ſovereign ſtates, do conſtantly bear; being, as it were, annexed to the territories, kingdoms, and provinces, they poſſeſs. Thus the three lions are the arms of England, the fleurs-de-lis thoſe of France, &c.

Arms of *pretenſion* are thoſe of ſuch kingdoms, provinces, or territories, to which a prince or lord has ſome claim, and which he adds to his own, although the ſaid kingdoms or territories be poſſeſſed by a foreign prince or other lord. Thus the kings of England have quartered the arms of France with their own, ever ſince Edward III. laid claim to the kingdom of France, which happened in the year 1330, on account of his being ſon to Iſabella, ſiſter to Charles the Handſome, who died without iſſue.

Arms of *conceſſion* or augmentation of honour, are either entire arms, or elſe one or more figures, given by princes as a reward for ſome extraordinary ſervice. We read in hiſtory, that Robert Bruce king of Scotland, allowed the earl of Wintoun's anceſtor to bear, in his coat-armour, a crown ſupported by a ſword, to ſhow that he, and the clan Seaton, of which he was the head, ſupported his tottering crown. The late Queen Anne granted to Sir Cloudeſly Shovel, rear-admiral of Great Britain, a cheveron between two fleurs-de-lis in chief, and a creſcent in baſe, to denote

HERALDRY.

Plate CCXXVII.

Fig. 1. (A)

LINES DIFFERENCES. &c.

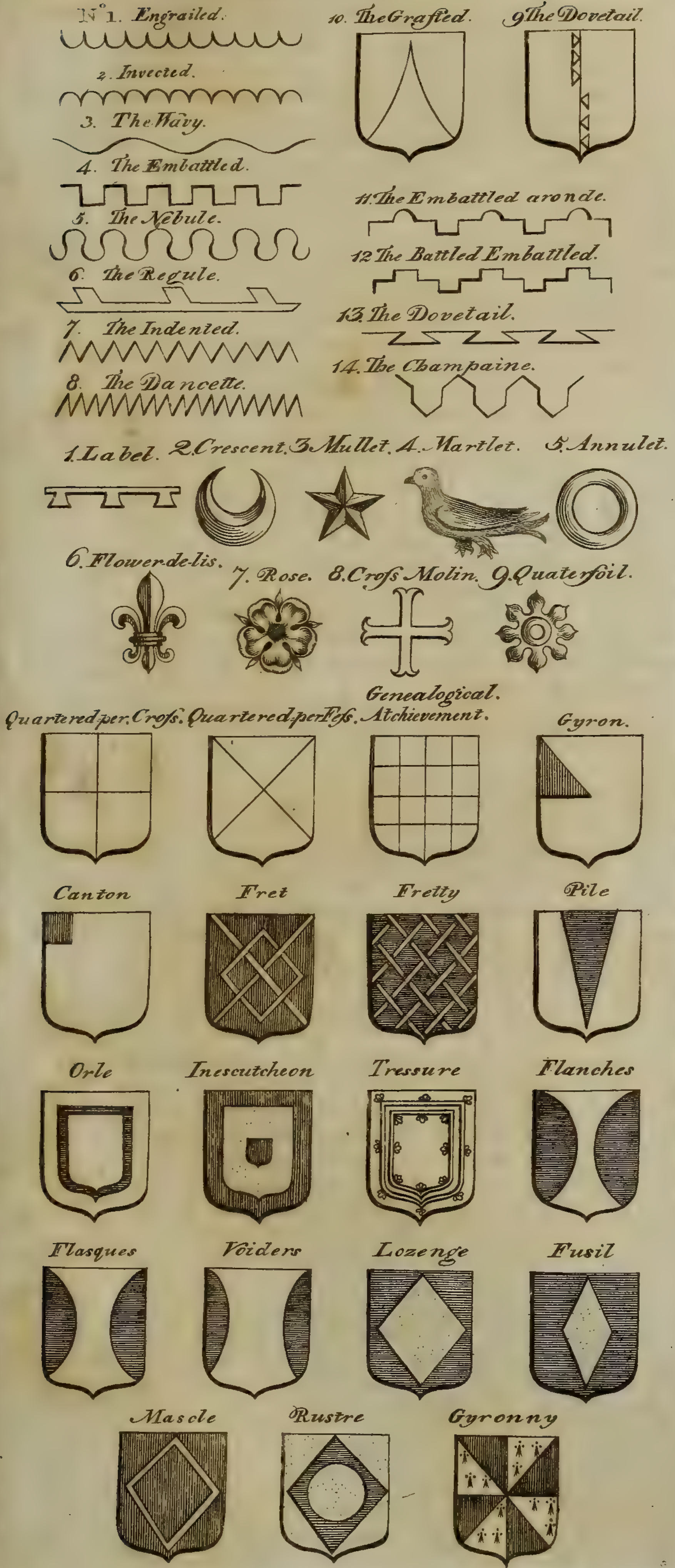


Fig. 1. (B)

ESCUTCHEONS.

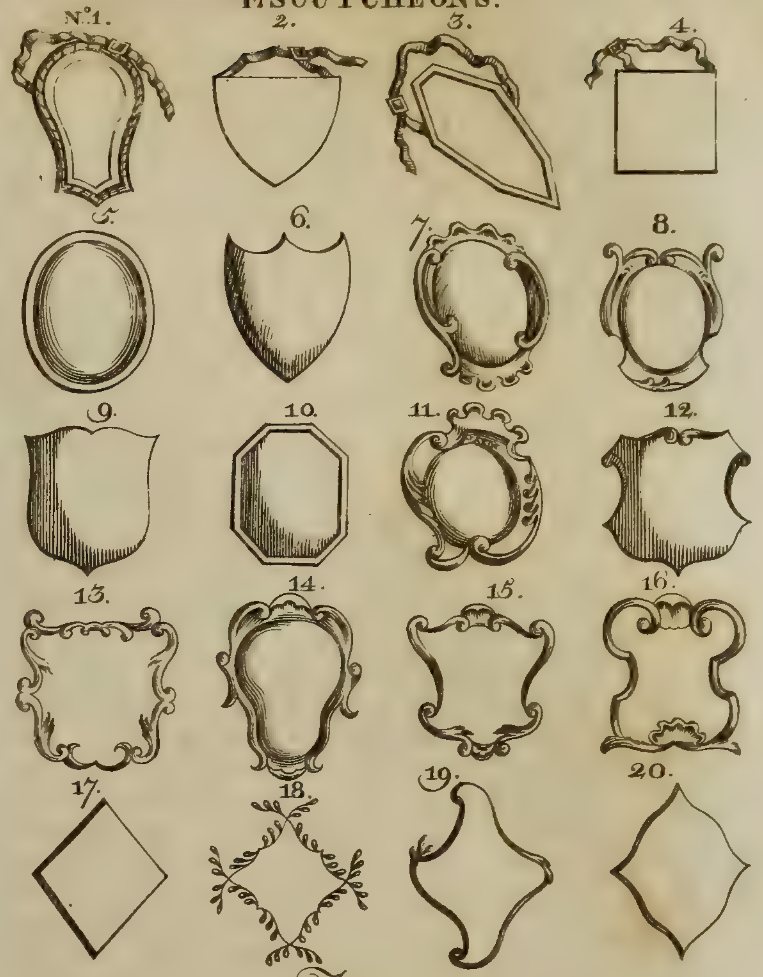
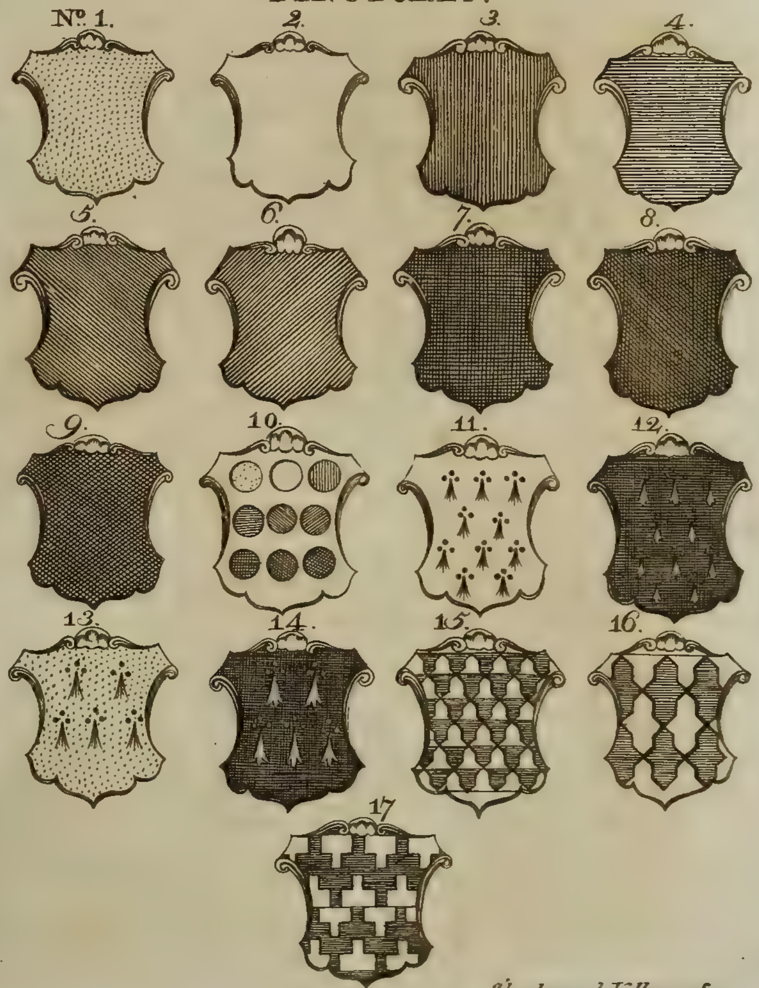


Fig. 2.

TINCTURES.



Thackara & Vallance Sc.

three great victories he had gained; two over the French, and one over the Turks.

Arms of *community*, are thoſe of biſhoprics, cities, univerſities, academies, ſocieties, companies, and other bodies corporate.

Arms of *patronage*, are ſuch as governors of provinces, lords of manors, patrons of benefices, &c. add to their family-arms, as a token of their ſuperiority, rights, and juriſdiction. Theſe arms have introduced into heraldry, caſtles, gates, wheels, ploughs, rakes, harrows, &c.

Arms of *family*, or *paternal arms*, are thoſe that belong to one particular family, that diſtinguiſh it from others, and which no perſon is ſuffered to aſſume without committing a crime, which ſovereigns have a right to reſtrain and puniſh.

Arms of *alliance*, are thoſe which families, or private perſons, take up and join to their own; to denote the alliances they have contracted by marriage. This ſort of arms is either impaled, or borne in an *eſcutcheon of pretence*, by thoſe who have married heireſſes.

Arms of *ſucceſſion*, are ſuch as are taken up by them who inherit certain eſtates, manors, &c. either by will, entail, or donation, and which they either impale or quarter with their own arms; which multiplies the titles of ſome families out of neceſſity, and not through oſtentation, as many imagine.

Theſe are the eight claſſes under which the divers ſorts of arms are generally ranged; but there is a ſort which blazoners call *aſſumptive arms*, being ſuch as are taken up by the caprice or fancy of upſtarts, though of ever ſo mean extraction, who, being advanced to a degree of fortune, aſſume them without a legal title. This, indeed, is a great abuſe of heraldry; and common only in Britain, for on the continent no ſuch practice takes place.

We now proceed to conſider the eſſential and integral parts of arms, which are theſe:

The Escutcheon, The Charges,
The Tinctures, The Ornaments.

CHAP. I.

Of the Shield *or* Escutcheon.

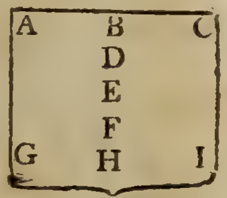
The *Shield* or *Eſcutcheon* is the field or ground whereon are repreſented the figures that make up a coat of arms: for theſe marks of diſtinction were put on bucklers or ſhields before they were placed on banners, ſtandards, flags, and coat-armour; and wherever they may be fixed, they are ſtill on a plane or ſuperficies whoſe form reſembles a ſhield.

Shields, in heraldry called *eſcutcheons* or *ſcutcheons*, from the Latin word *ſcutum*, have been, and ſtill are, of different forms, according to different times and nations. Amongſt ancient ſhields, ſome were almoſt like a horſe-ſhoe, ſuch as is repreſented by n° 1. in the figure of Eſcutcheons; others triangular, ſomewhat rounded at the bottom, as n° 2. The people who inhabited Meſopotamia, now called *Diarbeck*, made uſe of this ſort of ſhield, which it is thought they had of the Trojans. Sometimes the ſhield was heptagonal, that is, had ſeven ſides, as n° 3. The firſt of this ſhape is ſaid to have been uſed by the famous triumvir M. Antony. That of knights-banneret was ſquare, like a bannner, as n° 4. As to modern eſcutcheons, thoſe of the Italians, particularly of eccleſiaſtics, are generally oval, as n° 5. The Engliſh, French, Germans, and other nations; have their eſcutcheons formed different ways, according to the carver's or painter's fancy: ſee the various examples contained from n° 6—16 of the figure. But the eſcutcheons of maids, widows, and of ſuch as are born ladies, and are married to private gentlemen, is of the form in a lozenge: See n° 17—20. Sir George Mackenzie mentions one Muriel, counteſs of Strathern, who carried her arms in a lozenge, *anno* 1284, which ſhows how long we have been verſant in heraldry.

Plate CCXXVII

Armoriſts diſtinguiſh ſeveral parts or points in eſcutcheons, in order to determine exactly the poſition of the bearings they are charged with; they are here denoted by the firſt nine letters of the alphabet, ranged in the following manner:

A——*the dexter chief.*
B——*the* preciſe *middle chief.*
C——*the ſiniſter chief.*
D——*the honour point.*
E——*the feſs point.*
F——*the nombril point.*
G——*the dexter baſe.*
H——*the* preciſe *middle baſe.*
I——*the ſiniſter baſe.*



The knowledge of theſe points is of great importance, and ought to be well obſerved, for they are frequently occupied with ſeveral things of different kinds. It is neceſſary to obſerve, that the dexter ſide of the eſcutcheon is oppoſite to the left hand, and the ſiniſter ſide to the right hand of the perſon that looks on it.

CHAP. II.

Of Tinctures, Furs, Lines, *and* Differences.

Sect. I. *Of Tinctures.*

By *tinctures* is meant, that variable hue of arms which is common both to ſhields and their bearings. According to the French heralds, there are but ſeven tinctures in armory; of which two are metals, the other five are colours.

The Metals are,

Gold,	termed	*Or.*
Silver,		*Argent.*

The Colours are

Blue,	termed	*Azure.*
Red,		*Gules.*
Green,		*Vert.*
Purple,		*Purpure.*
Black,		*Sable.*

When natural bodies, ſuch as animals, plants, celeſtial bodies, &c. are introduced into coats of arms, they frequently retain their natural colours, which is expreſſed in this ſcience by the word *proper*.

Beſides the five colours abovementioned, the Engliſh writers on heraldry admit two others, *viz.*

Orange,	termed	*Tenny.*
Blood-colour,		*Sanguine.*

But theſe two are rarely to be found in Britiſh bearings.

Theſe tinctures are repreſented in engravings and

The Tinctures.

drawings (the invention of the ingenious Silveſter Petra Sancta, an Italian author of the laſt century) by dots and lines, as in fig. ii. n° 1—9.

Or is expreſſed by dots.

Argent needs no mark, and is therefore plain.

Azure, by horizontal lines.

Gules, by perpendicular lines.

Vert, by diagonal lines from the dexter chief to the ſiniſter baſe points.

Purpure, by diagonal lines from the ſiniſter chief to the dexter baſe points.

Sable, by perpendicular and horizontal lines croſſing each other.

Tenny, by diagonal lines from the ſiniſter chief to the dexter baſe points, traverſed by horizontal lines.

Sanguine, by lines croſſing each other diagonally from dexter to ſiniſter, and from ſiniſter to dexter.

Sir George M'Kenzie obſerves, that "ſome fantaſtic heralds have blazoned not only by the ordinary colours and metals; but by flowers, days of the week, parts of a man's body, &c. and have been condemned for it by the heralds of all nations. Yet the Engliſh have ſo far owned this fancy," (the moſt judicious of them, as Mr Cartwright and others, reprobate it as abſurd), "that they give it for a rule, that the coats of ſovereigns ſhould be blazoned by the planets, thoſe of noblemen by precious ſtones; and have ſuited them in the manner here ſet down:

Or	Topaz	Sol.
Argent	Pearl	Luna.
Sable	Diamond	Saturn.
Gules	Ruby	Mars.
Azure	Sapphire	Jupiter.
Vert	Emerald	Venus.
Purpure	Amethyſt	Mercury.
Tenny	Jacinth	Dragon's-head.
Sanguine	Sardonix	Dragon's-tail.

"But I crave leave to ſay, that theſe are but mere fancies; and are likewiſe unfit for the art, for theſe reaſons: 1ſt, The French (from whom the Engliſh derive their heraldry, not only in principles, but in words of the French language) do not only not uſe theſe different ways of blazoning, but treat them *en ridicule*. 2dly, The Italian, Spaniſh, and Latin heralds uſe no ſuch different forms, but blazon by the ordinary metals and colours. 3dly, Art ſhould imitate nature; and as it would be an unnatural thing in common diſcourſe not to call red *red* becauſe a prince wears it, ſo it is unnatural to uſe theſe terms in heraldry. And it may fall out to be very ridiculous in ſome arms: for inſtance, if a prince had for his arms an *aſs couchant* under his burden *gules*, how ridiculous would it be to ſay he had an *aſs couchant Mars*?—A hundred other examples might be given; but it is enough to ſay, that this is to confound colours with charges, and the things that are borne with colours. 4thly, It makes the art unpleaſant, and deters gentlemen from ſtudying it, and ſtrangers from underſtanding what our heraldry is; nor could the arms of our princes and nobility be tranſlated in this diſguiſe into Latin or any other language. But that which convinces moſt that this is an error, is, becauſe it makes that great rule unneceſſary, whereby colour cannot be put upon colour, nor metal upon metal: but this cannot hold but where metals and colours are expreſſed."

The Furs.

The Engliſh heralds give different names to the roundlet (n° 10), according to its colour. Thus, if it is

Or,	it is called a	*Bezant.*
Argent,		*Plate.*
Azure,		*Hurt.*
Gules,		*Torteau.*
Vert,		*Pomey.*
Purpure,		*Golpe.*
Sable,		*Pellet.*
Tenny,		*Orange.*
Sanguine,		*Guze.*

The French, and all other nations, do not admit ſuch a multiplicity of names to this figure; but call them *Bezants*, after an ancient coin ſtruck at Conſtantinople, once *Byzantium*, if they are Or and Torteaux; if of any other tincture, expreſſing the ſame.

Sect. II. *Of Furs.*

Furs repreſent the hairy ſkin of certain beaſts, prepared for the doublings or linings of robes and garments of ſtate: and as ſhields were anciently covered with furred ſkins, they are therefore uſed in heraldry not only for the linings of the mantles, and other ornaments of the ſhields, but alſo in the coats of arms themſelves.

There are three different kinds in general uſe, *viz.*

1. *Ermine*; which is a field argent, powdered with black ſpots, their tails terminating in three hairs. (Fig. ii. n° 11.)
2. *Counter-ermine*, where the field is ſable, and the powdering white. (n° 12.)
3. *Vair* (n° 15.), which is expreſſed by blue and white ſkins, cut into the forms of little bells, ranged in rows oppoſite to each other, the baſe of the white ones being always next to that of the blue ones. Vair is uſually of ſix rows; if there be more or fewer, the number ought to be expreſſed; and if the colours are different from thoſe abovementioned, they muſt likewiſe be expreſſed.

The Engliſh multiply the furs, as well as the names of the tinctures, though no other nation has adopted ſuch varieties. Thus they give us,

1. *White*, which is the natural colour of the ermine; but it is uſed on no other occaſion but in the deſcriptions of mantles.
2. *Ermines*, which is the ſame with contra-ermine.
3. *Erminois*; the field is Or, the powdering Sable; (n° 13.) For the uſe of this fur Guillim cites Bara, p. 14. but no ſuch fur is to be found in Bara.
4. *Pean*; the field is Sable, the powdering Or, (n° 14.) The French uſe no ſuch term: but they call all furs or doublings *des pannes*, or *pennes*; which term has poſſibly given riſe to this miſtake, and many others, in thoſe who do not underſtand the French language.
5. *Erminites*; the ſame as Ermine, with the addition of a red hair on each ſide of the black. Sir Geo. M'Kenzie calls theſe diſtinctions "but fancies, for *erminites* ſignifies properly *little ermines*."
6. *Counter-vair*; when the bells of the ſame tincture are

are placed baſe againſt baſe, and point againſt point, (n° 16.)

7. *Potent-counter-potent*, anciently called *Vairy-cuppy*, as when the field is filled with crutches or potents counter-placed, (n° 17.)

It may not be improper to obſerve, that the uſe of the tinctures took its riſe from the ſeveral colours uſed by warriors whilſt they were in the army, which S. de Petra Sancta proves by many citations. And becauſe it was the cuſtom to embroider gold and ſilver on ſilk, or ſilk on cloth of gold and ſilver, the heralds did therefore appoint, that in imitation of the clothes ſo embroidered, colour ſhould never be uſed upon colour, nor metal upon metal.

Sect. III. *Of the Lines uſed in the parting of Fields.*

Escutcheons are either of one tincture, or more than one. Thoſe that are of one only, that is, when ſome metal, colour, or fur, is ſpread all over the ſurface or field, ſuch a tincture is ſaid to be predominant: but in ſuch as have on them more than one, as moſt have, the field is divided by lines; which, according to their divers forms, receive various names.

Lines may be either ſtraight or crooked. Straight lines are carried evenly through the eſcutcheon: and are of four different kinds; *viz.* a perpendicular line |; a horizontal, —; a diagonal dexter, \; a diagonal ſiniſter, /.

Crooked lines are thoſe which are carried unevenly through the eſcutcheon with riſing and falling. French armoriſts reckon 11 different ſorts of them; Guillim admits of ſeven only; but there are 14 diſtinct kinds, the figures and names of which are as in fig. 1. (A), n° 1—14. *viz.*

1. The engrailed. 2. The invected. 3. The wavy. 4. The embattled, or crenelle. 5. The nebule. 6. The raguly. 7. The indented. 8. The dancette. 9. The dove-tail. 10. The grafted. 11. The embattled aronde. 12. The battled embattled. 13. The patee or dove-tail. 14. Champaine.

The principal reaſon why lines are thus uſed in heraldry, is to difference bearings which would be otherwiſe the ſame; for an eſcutcheon charged with a chief engrailed, differs from one charged with a chief wavy, as much as if the one bore a croſs and the other a ſaltier.

As the forementioned lines ſerve to divide the field, it muſt be obſerved, that if the diviſion conſiſts of two equal parts made by the perpendicular line, it is called *parted per pale*; by the horizontial line, *parted per feſs*; by the diagonal dexter, *parted per bend*; by the diagonal ſiniſter, *parted per bend ſiniſter*; examples of which will be given in the ſequel of this treatiſe.

If a field is divided into four equal parts by any of theſe lines, it is ſaid to be *quartered*; which may be done two ways, *viz.*

Quartered or parted *per croſs*; which is made by a perpendicular and horizontal line, which, croſſing each other at the centre of the field, divide into four equal parts called *quarters*. See Plate CCXXVII. under fig. i. (A).

Quartered or parted *per ſaltier*; which is made by two diagonal lines, dexter and ſiniſter, that croſs one another in the centre of the field, and likewiſe divide it into four equal parts. *Ibid.*

The eſcutcheon is ſometimes divided into a greater number of parts, in order to place in it the arms of the ſeveral families to which one is allied; and in this caſe it is called a *genealogical atchievement*. Theſe diviſions may conſiſt of 6, 8, 12, and 16, quarters [as under fig. i. (A)], and even ſometimes of 20, 32, 64, and upwards; there being examples of ſuch diviſions frequently exhibited at pompous funerals. An extraordinary inſtance of this kind was lately exhibited at the pompous funeral of the late worthy viſcounteſs Townſend, whoſe corpſe was brought from Dublin caſtle in Ireland to Rainham-hall in Norfolk, one of the principal tenants on horſeback carrying before the hearſe a genealogical banner, containing the quarterings of his lordſhip's and her ladyſhip's family, to the amount of upwards of 160 coats. Sir George Booth, rector of the valuable living of Aſhton under Line, bears ſix diſtinct coats of arms in his ſhield; *viz.* thoſe for Booth, Barton, Venables, Mountfort, Aſhton, Egerton; and has beſides a right to 37 other coats: but Sir William Dugdale very juſtly objects to ſo many arms being cluſtered together in one ſhield or banner, on account of the difficulty of diſcerning and knowing aſunder one coat of arms from another.

Sect. IV. *Of the Differences of Coats of Arms.*

Armorists have invented divers differences or characteriſtical marks, whereby bearers of the ſame coat of arms are diſtinguiſhed each from others, and their nearneſs to the principal bearer demonſtrated. According to J. Guillim, theſe differences are to be conſidered either as ancient or modern.

Art. 1. Of Ancient Differences.

Those he calls *ancient differences* conſiſt in *bordures* (A); which is a bearing that goes all round, and parallel to the boundary of the eſcutcheon, in form of a hem, and always contains a fifth part of the field in breadth. Bordures were uſed in ancient times for the diſtinguiſhing not only of one nation or tribe from another, but alſo to note a diverſity between particular perſons deſcended of one family and ~~and~~ from the ſame parents. This diſtinction, however, was not expreſsly ſignified by invariable marks; nor were bordures always appropriated to denote the different degrees of conſanguinity: for, as Sir Henry Spelman obſerves in his *Aſpilogia*, p. 140, ancient heralds, being fond of perſpicuous differences, often inverted the paternal tincture, or ſometimes inſerted another charge in the eſcutcheon, ſuch as bends, croſlets, cantons, or the like; which irregularity has, I ſuppoſe, induced modern armoriſts to invent and make uſe of others."

There are bordures of different forms and tinctures, as in the examples, fig. iii.

(A) Bordures are ſtill introduced in Engliſh coats of arms, but for particular reaſons, which heralds can beſt explain. They are by the French frequently taken for a principal figure, and numbered among the reſt of the ordinaries.

Ancient Differences.

Plate CCXXVIII

Nº 1. is "Sable, a Bordure Argent;" borne by the right hon. Sackville Tufton, earl of Thanet.—When a bordure is plain, you are not to mention it, as it is always underſtood ſo in heraldry, though it be not expreſſed; but if it has any other form, you are to ſignify it.

2. "Gules, a Bordure engrailed Argent;" borne by the right hon. Charles Gray, lord Gray.—This is called *engrailed*, from the French word *engrêlé*, which ſignifies a thing the hail has fallen upon and broken off the edges, leaving it with little ſemicircles ſtruck out of it.

3. "Gules, a Bordure engrailed Or;" borne by the right hon. George Talbot, earl of Shrewſbury. You muſt obſerve, that, in a bordure or ordinary formed of theſe lines, the points are repreſented on all ſides towards the field, and the ſemicircles turned towards the bordure or ordinary.

4. "Argent, a Bordure invected Azure."—This is quite contrary to the laſt; for as the other turns its points from the bordure into the field, ſo contrarywiſe this does, by the inverſion of the points from the field into the bordure. Such a charge or any other formed of theſe lines is ſeldom to be met with in Engliſh coats of arms.

5. "Gules, a Bordure indented Argent."—The word *indented* requires very little explanation, the ſignification being obvious to all perſons, from its figure, which is compoſed of tracks reſembling teeth, called in Latin *dentes*.

6. "Azure, a Bordure Ermine."

7. "Vert, a Bordure Vair."

8. "Ermine, a Bordure company, or gobony, Or and Sable."—This is ſo termed from its being compoſed of ſmall and equal pieces. J. Guillim calls this bordure *gobonated*, which implies the ſame meaning; but the word being obſolete, is not uſed by modern heralds.

9. "Quarterly, Azure and Gules, a Bordure company Argent and Azure;" borne by his grace Henry Somerſet, duke of Beaufort, &c.

10. "Azure, a Bordure counter-company Argent and Gules."—Obſerve, that the counter-company does always conſiſt of two tracks and no more.

11. "Or, a Bordure checky Argent and Sable."—This has a great reſemblance with the laſt bordure, having only one track more; therefore you muſt take care before you blazon, to number them, or elſe you may eaſily err in taking the one for the other.

12. "Gules, a Bordure Argent charged with eight Trefoils ſlipped proper, that is, Vert."—All nations uſe few terms in blazoning bordures; but Engliſh armoriſts, in order poſſibly to raiſe the dignity of this ſcience, have perplexed it, and rendered it unintelligible to all foreigners, by introducing into it ſeveral myſtical names, among which may be reckoned the following ones, *viz.* They call a bordure, if charged with eight plants, fruits, flowers, or leaves, *verdoy* of ſuch vegetables; or *enaluron* of ſuch birds; *enurny* of beaſts; *perflew* of furs; and *entoyre* of inanimate things of what kind ſoever.

13. "Gules on a Bordure Azure, eight Stars Or."

14. "Argent, a bordure company of the laſt and Gules, the firſt charged with Roſes of the ſecond, barbed and ſeeded proper."—This bordure is borne by his grace Charles Lenox, duke of Richmond, &c.

Ancient Differences.

15. "Ermine, within a Bordure engrailed Gules;" the coat of arms of the right hon Henry-Benedict Barnewall, viſcount Kingſland, &c. of Ireland.—This ancient and noble family is of French extraction, and allied to the dukes of Little Bretagne, where the name continues ſtill in great repute.

16. "Argent, a Bordure engrailed Sable charged with eight Beſants;" borne by the right hon. —— Cole, lord Ranelagh, of Ireland.

17. "Party per pale Argent and Gules, a Bordure charged with eight Eſcalops counterchanged;" the coat of arms of the right hon. William Maule, earl of Panmure, &c. of Ireland. This very ancient family is originally French, and derives its ſurname from the town and lordſhip of Maule in Normandy, where the ſame arms are ſtill to be ſeen in the pariſh-church.

18. "Azure, a Bordure quarterly, the firſt and fourth Ermine, the ſecond and third counter-compony Argent and Azure."

19. "Purpure, a Bordure compony Or and Gules, each of the laſt charged with a Beſant."

20. "Quarterly Or and Gules, within a Bordure Vert, charged with eight Eſcalops Or."

We ſhall conclude this head with obſerving, that a bordure is never of metal upon metal, and ſeldom of colour upon colour, but rather of the tincture which the principal bearing or charge is of. Thus Sir —— Dalziel of Glenae, whoſe predeceſſor was a younger brother of the noble family of Carnwath, has, within a Bordure Argent, the paternal coat of the ancient name of Dalziel, *viz.* "Sable, a hanged man with his arms extended, Argent;" formerly they carried him hanging on a gallows. This bearing, though ſo very ſingular for a coat of arms, was given as a reward to one of the anceſtors of the late Robert Dalziel, earl of Carnwath, to perpetuate the memory of a brave and hazardous exploit performed in taking down from a gallows the body of a favourite and near relation of king Kenneth II. hung up by the Picts; which ſtory is thus related by Alexander Niſbet: "The king being exceedingly grieved that the body of his minion and kinſman ſhould be ſo diſgracefully treated, he proffered a great reward to any of his ſubjects who would adventure to reſcue his corpſe from the diſgrace his cruel enemies had unjuſtly put upon it: but when none would undertake this hazardous enterpriſe, at laſt a valorous gentleman came and ſaid to the king, *Dalziel*, which ſignifies, "I dare;" and he did actually perform that noble exploit to the king's ſatisfaction and his own immortal honour, and in memory of it got the aforeſaid remarkable bearing; and afterwards his poſterity took the word *Dalziel* for their ſurname, and the interpretation of it, *I dare*, continues even to this day to be the motto of that noble family." We can have no better proof of the truth of this tradition than this, that the heads of this ancient family have for many ages carefully retained this bearing without any alteration or addition.

Art. 2. Of Modern Differences.

The modern differences which the Engliſh have adopted not only for the diſtinguiſhing of ſons iſſued

Modern Differences

out of one family, but alſo to denote the difference and ſubordinate degrees in each houſe from the original anceſtors, are nine, *viz.*

Plate CCXXVII under fig. i. (A)

For the heir or firſt ſon, the Label. 2d ſon, the Creſcent. 3d ſon, the Mullet. 4th ſon, the Martlet. 5th ſon, the Annulet. 6th ſon, the Flower-de-luce. 7th ſon, the Roſe. 8th ſon, the Croſs moline. 9th ſon, the Double quarter-foil.

By theſe differences, the ſix ſons of Thomas Beauchamp, the 15th earl of Warwick, who died in the 34th year of king Edward III. are diſtinguiſhed in an old window of the church of St Mary at Warwick; ſo that although they are called *modern differences,* their uſage with the Engliſh is ancient.

It muſt be obſerved, that, of all the forementioned marks of diſtinction, none but the label is affixed on the coats of arms belonging to any of the royal family; which the introducers of this peculiarity have, however, thought proper to difference by additional pendants and diſtinct charges on them.

As to the diſtinction to be made in the arms of the offspring belonging to each of the abovementioned brothers, it is expreſſed by figures on the top and margin of the table contained in fig. iv. For inſtance, The heir or firſt ſon of the ſecond houſe, beareth a creſcent charged with a label during his father's life only. The ſecond ſon of the ſecond houſe, a creſcent charged with another creſcent. The third ſon of the ſecond houſe, a creſcent charged with a mullet. The fourth ſon of the ſecond houſe, a creſcent charged with a martlet. The fifth ſon of the ſecond houſe, a creſcent charged with an annulet. The ſixth ſon of the ſecond houſe, a creſcent charged with a flower-de-luce; and ſo on of the other ſons, taking care to have them of a different tincture.

Plate CCXXVIII

In what part of the eſcutcheon theſe differences ſhould be borne is not certain; for Guillim, Morgan, and others, give us many different examples of their poſition. The honour-point would be the propereſt place, if the arms would admit of it; but that is not always the caſe, as that part may be charged with ſome figure in the paternal coat, which cannot with propriety receive the difference. There are inſtances where theſe are borne as perfect coats of arms, as the examples ſubjoined to the Table of Houſes ſufficiently ſhow; which are to be blazoned thus:

The firſt is "Azure, a Label Argent."—When ſuch a label is borne as a difference, the pendants, according to G. Leigh, ſignify that he is but the third perſon; the dexter pendant referring to his father, the ſiniſter to his mother, and the middle one to himſelf.

The ſecond is "Argent, a Label of five points Azure;" borne by the name of Hentington. If a label has more or leſs than three pendants or points, they are to be expreſſed as in the foregoing example.

The third is "Azure, a Creſcent Argent." borne by the name of Lucy.—The reaſon G. Leigh aſſigns for the ſecond ſon's having a creſcent for a difference, is to ſhow that he ſhould increaſe the family by adding to it riches and reputation.

The fourth is "Argent, a Mullet Sable, on a Chief Azure, a Fleur-de-lis Or;" borne by the name of Rogers, in Glouceſterſhire.—A mullet or ſpur was appointed for the third ſon's difference, as the laſt-mentioned author ſays, to ſhow that he ſhould follow chivalry.

Modern Differences

The fifth is "Azure, a Fleur-de-lis Argent;" borne by the right hon. Henry Digby, baron Digby of Geaſhil, in King's-County, Ireland.

Theſe few examples, among many more that might be given, demonſtrate the impropriety of adopting theſe *modern differences,* as they are called, for marks of cadency to diſtinguiſh the different branches of a family: for it is impoſſible to diſtinguiſh the uncle or grand-uncle from the nephew or grand-nephew, if each of them are ſecond, third, or fourth ſons; and in the courſe of ſucceſſion theſe differences would multiply to ſuch a number, that it would be impoſſible to delineate them diſtinctly in moſt caſes. But as they are given by moſt of the Engliſh writers on heraldry, though no foreign nation uſes them, it was thought proper to inſert them here.

Siſters, except of the blood-royal, have no other mark of difference in their coats of arms, but the form of the eſcutcheon (as obſerved before); therefore they are permitted to bear the arms of their father, even as the eldeſt ſon does after his father's deceaſe. The reaſon of which is by Guillim ſaid to be, that when they are married, they loſe their ſurname, and receive that of their huſbands.

Next to theſe diminutions, G. Leigh, J. Guillim, and after them Dr Harris in his *Lexicon Technicum,* ſet forth at large divers figures, which they pretend were formerly added to the coats of ſuch as were to be puniſhed and branded for cowardice, fornication, ſlander, adultery, treaſon, or murder, for which they give them the name of *abatements of honour;* but as they produce but one inſtance of ſuch whimſical bearings, we have not inſerted them here. Beſides arms being marks of honour, they cannot admit of any note of infamy; nor would any body now-a-days bear them if they were ſo branded. It is true, a man may be degraded for divers crimes, particularly high treaſon; but in ſuch caſes the eſcutcheon is reverſed, trod upon, and torn in pieces, to denote a total extinction and ſuppreſſion of the honour and dignity of the perſon to whom it belonged.

CHAP. III.

Of the CHARGES.

ARMORISTS call a charge whatſoever is contained in the field, whether it occupy the whole or only a part thereof. All charges are diſtinguiſhed by the name, of *honourable ordinaries, ſub-ordinaries,* and *common charges.*

Honourable ordinaries, the principal charges in heraldry, are made of lines only, which, according to their diſpoſition and form, receive different names.

Sub-ordinaries are ancient heraldric figures, frequently uſed in coats of arms, and which are diſtinguiſhed by terms appropriated to each of them.

Common charges are compoſed of natural, artificial, and even chimerical things; ſuch as plants, creatures, vegetables, inſtruments, &c.

SECT. I. *Of Honourable Ordinaries.*

THE moſt judicious armoriſts admit only of nine honourable ordinaries, *viz.*

Honourable Ordinaries.

The Chief
The Plate
The Bend
The Bend ſiniſter
The Feſs
The Bar
The Cheveron
The Croſs
and
The Saltier.

Of theſe, but ſix have diminutives, which are called as follows: That of the chief is a *fillet;* the pale has a *pallet* and *endorſe*, the bend, a *bendlet, coſt*, and *ribband;* the bend ſiniſter has the *ſcarp* and *bâton;* the bar, the *cloſet* and *barulet;* the cheveron, a *chevronel* and *couple-cloſe*. All which will be treated of in order.

Art. I. Of the Chief.

The chief is an ordinary determined by an horizontal line, which, if it is of any other form but ſtraight, muſt be expreſſed. It is placed in the upper part of the eſcutcheon, and containeth in depth the third part of the field. Its diminutive is a fillet, the content of which is not to exceed one-fourth of the chief, and ſtandeth in the loweſt part thereof. This ordinary is ſubject to be charged with variety of figures; and may be indented, wavy, nebule, &c. as in the examples, fig. v.

Plate CCXXVIII

N° 1. is Or, "a Chief indented Azure;" borne by the right hon. Edmund Butler, viſcount Mountgarret, &c. of the kingdom of Ireland. This great and illuſtrious family of the Butlers, ſo renowned for the many valiant and loyal perſons it has produced, is deſcended from the ancient counts of Brion in Normandy; but ſince king Henry II. conferred the office of chief butler of Ireland upon one of the family, he and his ſucceſſors have aſſumed the name of *Butler*.

2. "Azure a Chief engrailed Or."

3. "Argent, a Chief invected Vert."

4. "Vert, a Chief undy Or."

5. "Azure, a Chief nebule Argent."

6. "Or, a Chief checky Azure and Argent."

7. "Ermine, a Chief quarterly Or and Gules;" borne by the name of Peckham.

8. "Argent, a Chief Sable, in the lower part thereof a Fillet of the Field."

9. "Azure, fretty Argent, a Chief Or;" borne by the right hon. Hayes St Leger, viſcount Doneraile, &c. of the county of Cork in Ireland. This ancient and noble family is of French extraction; and is deſcended from Sir Roger St Legére, knight, who in 1066, accompanied William Duke of Normandy in his expedition into England; and the family have a tradition, that he, with his own hand, ſupported the ſaid duke when he quitted the ſhip to land in Suſſex.

10. "Argent, on a Chief engrailed Azure, a Tortoiſe paſſant Or;" borne by the name of *Bidgood*.

11. "Argent, on a Chief Gules, two Spur revels Or;" borne by the right hon. John St John, lord St John of Bletſhoe, &c. Of this ancient family, which derive their ſurname from a place called *St John* in Normandy, was John de St John, Eſq; who having a principal employment in the army of the Norman duke, attended him in his expedition into England.

12. "Argent, on a Chief Vert, two Spears Heads erect of the Field, the points imbrued Gules;" borne by the right hon. George Brodrick, Viſcount Middleton, &c. of the kingdom of Ireland. This family is lineally deſcended from George de Brodrick, who came into England in the reign of William II.

Honourable Ordinaries.

13. "Or, on a Chief Sable, three Eſcalops of the field," for the name of *Graham;* and borne quartered in the arms of his Grace William Graham, duke, marquis, and earl of Montroſe, &c. with Argent three Roſes Gules. According to the Scots writers, this great and noble family is deſcended from the renowned Greme or Grame, who, in the 404, was general of king Fergus II's, army, and, in 420, forced his way through the wall built by the Romans between the rivers Forth and Clyde to keep out the Scots from moleſting them in their poſſeſſions, and the ſaid breach has ever ſince been called *Grame's-dike*.

14. "Argent, on a Chief indented Gules, three Croſſes pattee of the Field;" borne by the right hon. John Perceval, earl of Egmont, &c. This very ancient and noble family is ſuppoſed, from circumſtances little ſhort of poſitive proof, to have ſprung from a younger branch of the ſovereign dukes of Bretagne in France, of the ſame name. They were tranſplanted into Normandy before the conqueſt, poſſeſſed of great eſtates and power, and inveſted with the office of chief butler. Upon the Norman invaſion, two of this family came over into England with the Conqueror, from one of which the deſcent of the preſent earl of Egmont is deduced by the cleareſt and moſt indiſputable proofs of hiſtorians and records.

15. "Azure, on a Chief indented Or, three Spurrevels Gules;" borne by the right hon. Charles Moore, earl of Drogheda, &c. of the kingdom of Ireland. This noble family, which is of French extraction, came into England ſoon after the conqueſt, and made their firſt reſidence in the manor of Moore-court, in the county of Kent.

16. "Ermine, on a Chief indented Azure, three ducal coronets Or;" borne by the name of *Lytton*.

17. "Azure, on a Chief Or; three martlets Gules," for the name of *Wray;* and borne by Sir Cecil Wray, Bart. of Lincolnſhire.

18. "Ermine, on a Chief Gules; five Lozenges of the firſt;" borne by the name of *Dixin*.

19. "Argent, fretty Gules, on a Chief of the ſecond, Three Leopard's Faces Or;" borne by the right hon. Henry Liddel, lord Ravenſworth. This noble lord is deſcended from the ancient lords of Liddlecaſtle, in the county of Durham, where they have been proprietors of great coal-mines time out of mind.

20. "Ermine, a Chief party per pale Azure and Or; on the dexter the Sun in its ſplendor, on the ſiniſter a Croſs pattee Gules." The arms of the biſhopric of Raphoe, in the kingdom of Ireland.

Art. II. Of the Pale.

The Pale is an ordinary, conſiſting of two perpendicular lines drawn from the top to the baſe of the Eſcutcheon, and contains the third middle part of the field. Its diminutives are, the pallet, which is the half of the pale; and the endorſe, which is the fourth part of a pale. This ordinary and the pallet may receive any charge, but the endorſe ſhould not be charged. The endorſe, beſides, is never uſed, according to J.

Leigh, but to accompany the pale in pairs, as cotices do the bend; but Sir John Ferne is of a different opinion.

Plate CCXXVIII fig. vi.

Ex. 1. "Gules, a Pale Or;" by the name of *Grandmain*.

2. "Party per Pale Argent and Gules, a Pale counterchanged.

3. "Argent, a Pale between two Endorſes Gules."

4. "Party per Pale, 1ſt, Paly of ſix Argent and Sable, 2d, Azure;" borne by the name of *Trenchard*.

5. "Paly of ſix Or and Azure."

6. "Argent, three Pallets under Sable; by the name of *Downes*.

7. "Party per Pale, Argent and Gules;" borne by the right hon. John Waldegrave, earl Waldegrave, &c. This noble earl is deſcended from John de Waldegrave, who was ſheriff of London in the year 1205, in the ſeventh year of king John.

8. "Party per Pale indented, Or and Gules;" borne by the right hon. Thomas Bermingham, baron of Athenry, in the kingdom of Ireland. Of this ancient and noble family, which are of Engliſh extraction, and took their name from the town of Bermingham in the county of Warwick, was William de Bermingham, who was poſſeſſed of the town of that name in the reign of Henry II. which continued in that family till the reign of Henry VIII.

9. "Quarterly per Pale dove-tail, Gules and Or;" borne by the right hon. Thomas Cromley, lord Montfort, &c. This noble lord is maternally deſcended from Sir Walter Bromleghe of Bromleghe, in the county of Stafford, who flouriſhed in the reign of king John. Sir Thomas Bromley, another of his lordſhip's anceſtors, was conſtituted lord high chancellor of England, 21 Elizabeth; in which poſt he died, 29 Elizabeth.

10. "Argent, a Pale flory counterflory Sable."

11. "Argent, a Pale lozengy Sable; borne by the name of *Savage*.

12. "Argent, a Pale indented Vert;" borne by the name of *Dixon*.

13. "Argent, on a Pale engrailed Sable, three Creſcents Or;" borne by the name of *Aſhly*.

14. "Ermine, on a Pale engrailed azure, three Lion's Heads couped Or;" borne by the name of *Avery*.

15. "Vert, on a Pale radiant Or, a Lion rampant Sable;" borne by the right hon. James O'Hara, lord Tyrawley, &c. in the kingdom of Ireland. This noble lord is deſcended from Mileſius king of Spain, by his eldeſt ſon Hiberius, who, with his brother Heremon, eſtabliſhed a colony in Ireland. Sir Charles O'Hara, father to the preſent lord, was created baron of Tyrawley by queen Anne, Jan. 10. 1706, being at that time a lieutenant-general, and colonel of the royal regiment of fuſileers: and the next year was made general in Spain, where this ſon, lord James, was wounded at the battle of Almanza.

16. "Azure, a Pallet Argent."

17. "Vert, an Endorſe Or."

18. "Argent, on two Pallets Sable, ſix Croſs-croſlets fitchy Or;" borne by the names of *Betunes*, of the county of Salop.

19. "Argent, two Endorſes Gules, in Chief three Mullets Sable;" borne by the name of *Vautort*.

20. "Azure, on a Pale walled with three pieces on each ſide Or, an Endorſe Sable;" borne by the name of *Sublet de Noyers*, a family of diſtinction in France.

ART. III. Of the BEND and BEND-SINISTER.

THE Bend is an ordinary formed by two diagonal lines, drawn from the dexter-chief to the ſiniſter-baſe; and contains the fifth part of the field in breadth, if uncharged: but if charged, then the third. Its diminutives are, the bendlet, which is the half of a bend; the coſt or cotice, when two of them accompany a bend, which is the fourth part of a bend; and the ribband, the moiety of a coſt, or the eight part of the field.

There is alſo the bend-ſiniſter, which is of the ſame breadth as the bend, but drawn the contrary way: this is ſubdivided into a ſcrape, which is the half of the bend, and into a bâton, which is the fourth part of the bend, but does not extend itſelf to the extremities of the field, there being part of it ſeen at both ends. See the examples, fig. vii.

Plate CCXXIX.

Ex. 1. "Argent, a Bend wavy Sable;" borne by the right hon. John Wallop, earl of Portſmouth, &c. This noble earl is deſcended from the Wallops of Hampſhire, a Saxon family, who were poſſeſſed of lands to a conſiderable value in the county at the time of the conqueſt.

2. "Checky Or, and Azure, a bend of Ermine;" borne by the right hon. John Ward, viſcount Dudley and Ward, &c. The anceſtors of this noble lord were anciently of the county of Norfolk, of which was Simon Ward, who had large poſſeſſions in the reign of Edward I. and was in France and Scotland in the reigns of king Edward II. and III.

3. "Azure, a Bend engrailed Argent, between two Cotices Or;" borne by the right hon. Matthew Forteſcue, lord Forteſcue, as alſo by the right hon. Hugh Forteſcue-Aland, baron Forteſcue, in the kingdom of Ireland, this laſt nobleman bearing a creſcent in his arms for difference. The family of Forteſcue is deſcended from Sir Richard le Forte, a perſon of extraordinary ſtrength and courage, who accompanied William duke of Normandy in his invaſion of England; and bearing a ſtrong ſhield before the duke, at the battle of Haſtings, had three horſes killed under him, and from that ſignal event the name and motto of the family were aſſumed; for the Latin word *ſcutum*, or the old French word *eſcue* "a ſhield" being added to *forte* "ſtrong," compoſe their name; and the motto is, *Forte ſcutum ſalus ducum*.

4. "Sable,, a Bend Argent between two Cotices indented Or;" borne by the name *French*.

5. "Paly of ſix Or and Sable, a Bend counterchanged;" borne by the right hon. Frederick Calvert, baron Baltimore. The original of this family is from an ancient and noble houſe of that ſurname in the earldom of Flanders, whereof Sir George Calvert, knight, among other honourable employments, was ſecretary of ſtate to king James I. by whom he was created a baron, Feb. 20. 1624, and from whom he had a grant to him, and his heirs, of the province of Maryland and Avalon in America.

6. "Party per Bend crenelle Argent and Gules;" borne by the right hon. Edmund Boyle, earl of Cork and Orrery, &c. in the kingdom of Ireland. This noble lord is ſaid to be deſcended from Sir Philip

Boyle, a knight of Arragon, who, in the reign of king Henry VI. tilted at a tournament with Sir Joſeph Aſtley, knight of the Garter.

7. “ Argent, three Bendlets enhanſed Gules:” as the Engliſh expreſs it, but the phraſe enhanſed is uſed by no other nation. The proper blazon of this arm is, Parted per bend, 1ſt bendy of ſix gules, and argent; 2d of the laſt. Borne by the right hon. William Byron, lord Byron. From Doomſday-book it appears, that this family was poſſeſſed of numerous manors and lands in the reign of the Conqueror; and that Sir John Byron, one of his lordſhip's anceſtors, attended king Edward III. in his wars in France.

8. “ Ermine, a Bend voided Gules;” borne by the name of *Ireton*.

9. “ Argent three Bendlets wavy Azure;” borne by the name of *Wilbraham*.

10. “ Bendy of ſix pieces of Argent and Azure.” Obſerve, that when the ſhield is filled with an equal number of bendlets of metal and colour, it is called *bendy*; but if the number of them is unequal, they are to be blazoned by the name *bendlets*, and their number ſpecified.

11. “ Party per Bend Azure and Argent, two Bendlets engrailed counterchanged;” borne by the name of *Frenes*.

12. “ Quarterly, Or and Gules, a Bend over all Vair;” borne by his grace Lionel Cranfield Sackville, duke of Dorſet and earl of Middleſex, &c. The anceſtors of this family were lords of the town and ſeigniory of Sackville in Normandy, and came over with the Conqueror when he invaded England in 1066.

13. “ Gules on a Bend Argent, three Trefoils ſlipped proper;” borne by the right hon. George William Hervey, earl of Briſtol, &c. This noble lord derives his pedigree from Robert Fitz-Hervey, a younger ſon of Hervey duke of Orleans, who came over from France with William the Conqueror.

14. “ Argent, on a bend Gules cotiſed Sable, three pairs of Wings conjoined of the firſt;” borne by the right hon. Richard Wingfield, viſcount Powerſcourt, in the kingdom of Ireland. This noble lord is denominated from the manor of Wingfield in Suffolk, where they had a ſeat before the Norman conqueſt, called *Wingfield-caſtle*.

15. “ Gules on a Bend contre Ermine cotiſed Or, three Boars Heads couped Argent;” borne by the right hon. George Edgcumbe, lord Edgcumbe, &c. The anceſtors of this noble lord received their name from the manor of Edgcumbe in Devonſhire. One of this lord's anceſtors was Sir Richard Edgcumbe, who came over to England with the earl of Richmond, having a great ſhare in the victory he obtained over king Richard III. at Boſworth, by which the earl made his way to the throne of England.

16. “ Argent, a Bend ſiniſter Gules.”

17. “ Or, a Bendlet Gules.”

18. “ Argent, a Ribband Gules.”—The name of this bearing correſponds well with its form, being both long and norrow, which is the ſhape of a ribband.

19. “ Azure, a Scrape Or.”—This bearing, as Guillim obſerves, is that kind of ornament called now-a-days a *Scarf*, which is uſed by officers on duty, and uſually worn after the ſame manner.

20. This contains three Batons. The firſt is compony ermine and azure; ſet over the royal arms, for his grace William Fitzroy duke of Cleveland. The ſecond is compony argent and azure; ſet over the royal arms, for his grace Auguſtus Henry Fitzroy, duke of Grafton. The third is gules, charged with three roſes argent, ſeeded and barbed proper; ſet over the royal arms, for his grace George Beauclerk, duke of St Albans. The grandfathers of theſe noble dukes being natural ſons of king Charles II. is what entitles them to the royal arms.

Art. IV. Of the Feſs and Bar.

The Feſs is an ordinary which is produced by two parallel lines drawn horizontally acroſs the centre of the field and contains in breadth the third part thereof. Some Engliſh writers ſay it has no diminutive, for the bar is a diſtinct ordinary of itſelf.

The Bar, according to their definition, is formed of two lines, and contains but the fifth part of the field: which is not the only thing wherein it differs from the feſs; for there may be more than one in an eſcutcheon, placed in different parts thereof, whereas the feſs is limited to the centre-point; but in this the French differ from them. The bar has two diminutives; the barulet, which contains the half of the bar; and the cloſet, which is the half of the barulet. When the ſhield contains a number of bars of metal and colour alternate, of even number, that is called *barry* of ſo many pieces, expreſſing their number. See the examples, Plate CCXXIX. fig. viii.

N° 1. is “ Argent, a Feſs indented Sable;” borne by the right hon. John Weſt, earl Delawarr, &c. This noble family is deſcended from the Weſts, a great family in the weſt of England; but in the reign of Edward II. they appear to have been ſeized of manors and lands in the county of Warwick. Sir Thomas de Weſt, knight, one of his lordſhip's anceſtors, being at the battle of Creſſy, and there taking John the French king priſoner, had granted him for that remarkable action, an augmentation to his atchievement, viz. a crampette or, diſtinguiſhed by the chape of a ſword in the middle; the chape being given him by the ſaid king, as an acknowledgment of his becoming his priſoner: his cognizance was a roſe parted per pale, argent, and gules; which two badges are ſtill borne in the atchievement of the preſent lord Delawarr.

2. “ Argent, a Feſs wreathed Azure and Gules;” borne by the right hon. John Carmichael, earl of Hyndford. Of this ancient family, which is ſaid to aſſume their ſurname from the lands of Carmichael, in the county of Lanark, in Scotland, where they ſtill have their chief ſeat, was Sir John Carmichael, who accompanied Archibald, earl of Douglas, to the aſſiſtance of Charles VI. of France, againſt the Engliſh; and ſignalizing his valour at the battle of Baughey in April 1421, and breaking his ſpear when the French and Scots got the victory, had thereupon added to his paternal coat, a dexter arm holding a broken ſpear, which is now the creſt of the family.

3. “ Party per Feſs Or and Argent, a Feſs nebule Gules;” borne by the name of *Anteſhed*.

4. “ Party per Feſs indented Or and Azure;” borne by the name of *Saunders*.

HERALDRY.

Plate CCXXIX.

Fig. 7.
BENDS &c.

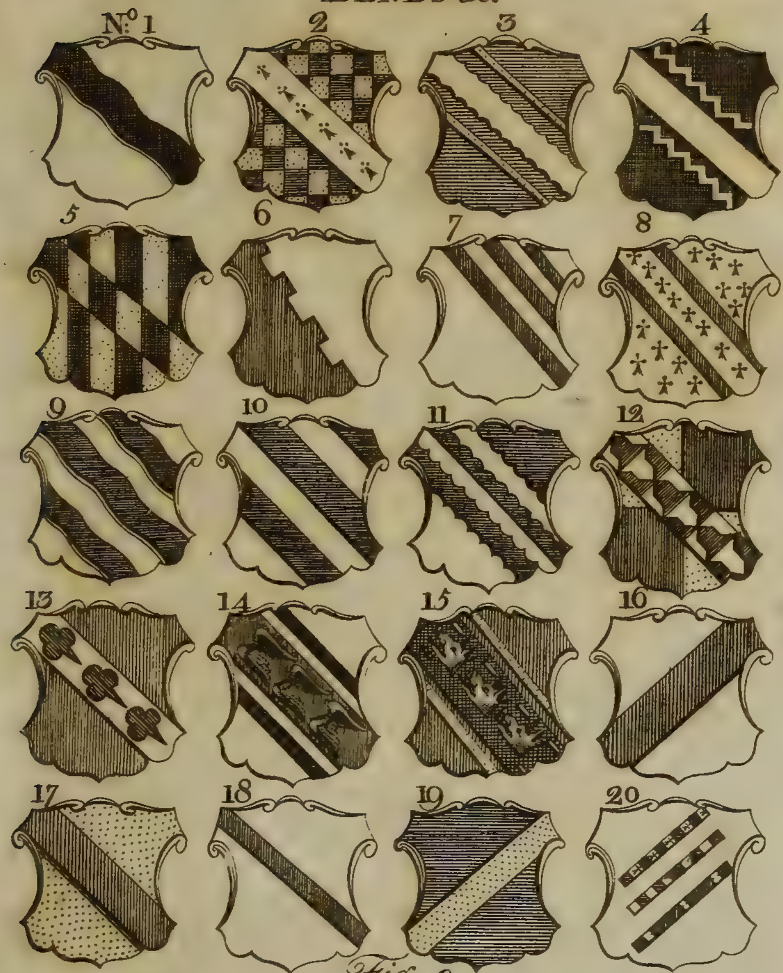


Fig. 8.
FESSES & BARS.

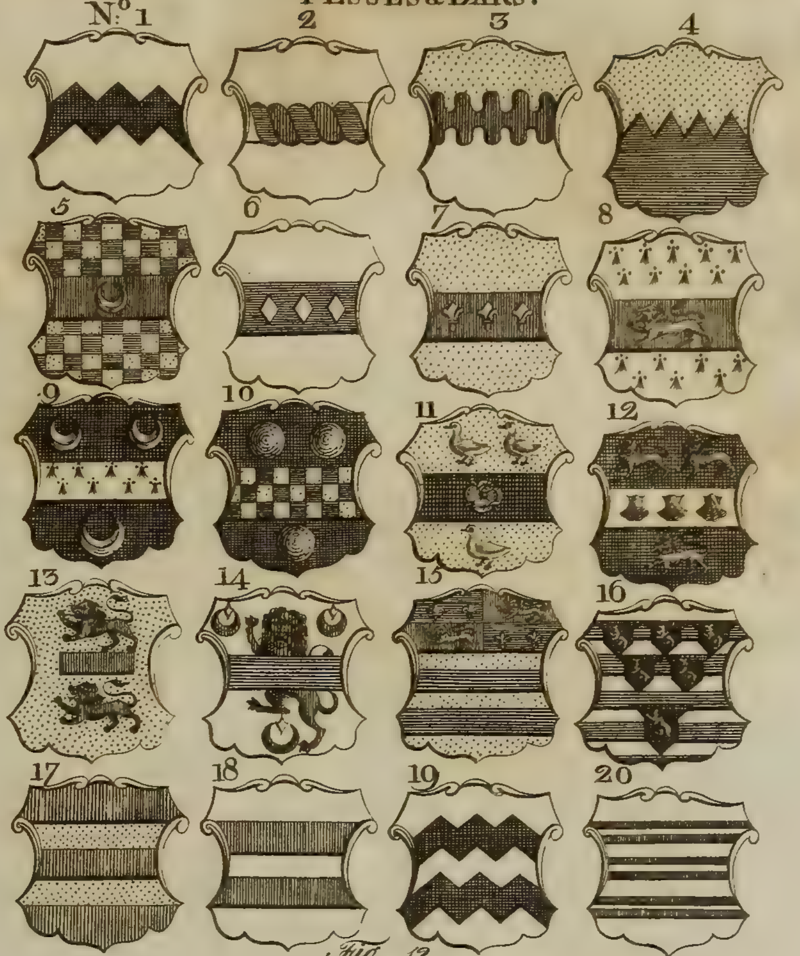


Fig. 9.
CHEVERON &c.

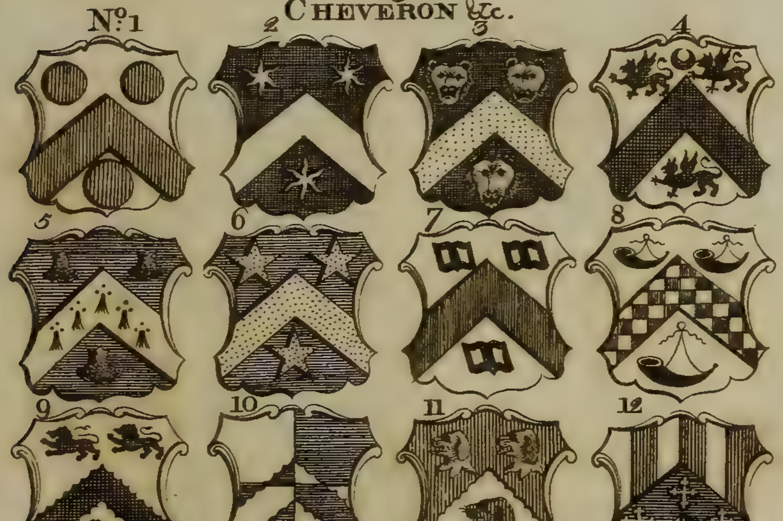
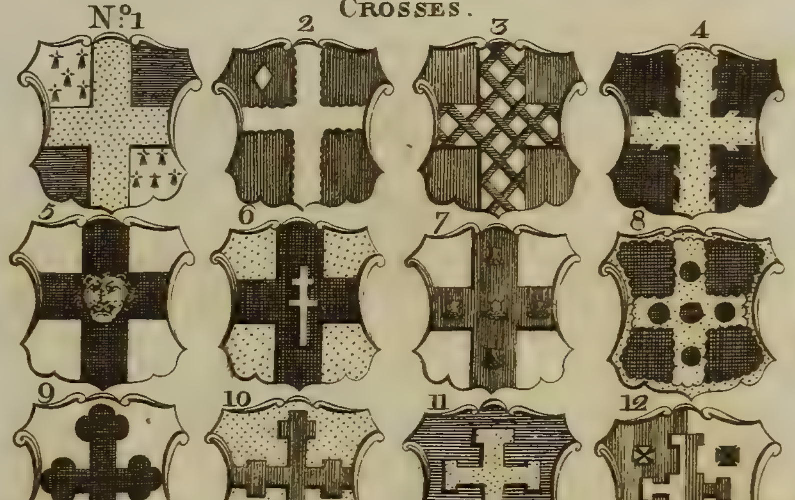


Fig. 12.
CROSSES.



Thackara & Vallance sc.

5. "Checky Or and Azure on a Feſs Gules, a Creſcent argent for difference;" borne by the right hon. Hugh Clifford, lord Clifford, of Chudley. This noble lord is deſcended from Walter de Clifford, of Clifford Caſtle, in the county of Hereford, who came over into England with the Conqueror; of which family was fair Roſamond, miſtreſs to king Henry II.

6. "Argent on a Feſs Azure, three Lozenges Or;" bore by the right hon. Baſil Fielding, earl of Denbigh and Deſmond, &c. This noble earl is deſcended from the earls of Hapſburg, in Germany. Geoffroy, earl of Hapſburg, being oppreſſed by Rodolph emperor of Germany, came over into England, and one of his ſons ſerved king Henry III. in his wars, whoſe anceſtors laying claim to the territories of Luffenburg and Rhin-Filding, in Germany, he took the name of *Fielding*.

7. "Or, on a Feſs Gules, three Fleur-de-lis of the firſt; borne by the name of *Lennard*. This is in the firſt and fourth quarters of the right hon. Thomas Barret Lennard lord Dacre's arms.

8. "Ermine, on a Feſs Gules, a Lion paſſant Or;" borne by the right hon. John Proby, baron Carysfort, &c. in the kingdom of Ireland.

9. "Sable, a Feſs Ermine, between three Creſcents Or;" borne by the right hon. George-William Coventry, earl of Coventry, &c. This noble earl is deſcended from John Coventry, a native of the city of Coventry, and afterwards mercer and lord-mayor of London, in the reign of Henry V.; from whom deſcended Thomas Coventry, one of the juſtices of the court of Common-pleas, in the reign of queen Elizabeth; whoſe ſon Thomas was recorder of London, and afterwards lord keeper of the great ſeal in the reign of king Charles I.

10. "Sable, a Feſs checky, Or and Azure, between three Beſants;" borne by the right hon. Ridgeway Pitt, earl and baron of Londonderry, &c. Of this noble family, which were anciently of Bandfort, in the county of Dorſet, was Thomas Pitt, Eſq; who, in the reign of queen Anne, was made governor of fort St George in the Eaſt Indies, where he reſided many years, and purchaſed a diamond, which he ſold to the king of France for 125,000l. Sterling, weighing 136 carats, and commonly know at this day by the name of *Pitt's diamond*.

11. "Or, on a Feſs Sable, between three Muſcovy Ducks proper, a Roſe of the Field;" borne by the right hon. John Bateman, viſcount Bateman, &c. Of this noble family, which was anciently ſeated at Haleſbrook, near St Omers in Flanders, was Giles Bateman, Eſq; whoſe ſon was a merchant of London, and was father to Sir James Bateman, knight, who, in 1712, was choſen member of parliament for Ilcheſter in the county of Somerſet, and re-choſen in 1713.

12. "Sable, on a Feſs Argent, between three Leopards paſſant guardant Or, three Eſcalops Gules;" borne by the right hon. Wills Hill, earl of Hillſborough, &c. Of this family, which in the reign of queen Elizabeth, were of note in the county of Downe, was Sir Moſes Hill, who, during O'Neile's rebellion, was one of thoſe gentlemen who aſſociated under the earl of Eſſex to ſuppreſs it; and afterwards ſerved under Arthur lord Chicheſter, lord deputy, and by king James I. was appointed provoſt-marſhal of the whole province of Ulſter in Ireland.

13. "Gules, two Bars Or;" borne by the right hon. Simon Harcourt, eral of Harcourt, &c. This noble earl is deſcended from the Harcourts of Normandy, who took their name from a place called *Harcourt*, in that province, where the family uſually reſided. Gervaiſe, count de Harcourt, with his two ſons Jeffrey and Arnold, came over with the conqueror, when he invaded England in 1066.

14. "Ermine, two Bars Gules; borne by the right hon. Thomas Nugent, earl of Weſtmeath, and baron Delvin.

15. "Argent, two Bars indented Sable;" borne by the right hon. Godart Ginkle, earl of Athlone. Godart, who was the firſt earl, was deſcended of a very ancient family in the United Provinces of Holland, where he was baron de Reede and Ginkle, &c. In 1691, he was a lieutenant-general of king William's forces in Ireland; where in June the ſame year, he took Ballymore for the Engliſh; and, in July following, the Iriſh town of Athlone, which laſt exploit is one of the greateſt recorded in hiſtory.

16. "Argent, three bars gemels Gules;" borne by the right hon. Richard Barry, earl of Barrymore, &c. This noble family, who have been renowned for their loyalty and valour, are ſaid to derive their ſurname from the iſland of Barry, in the county of Glamorgan, in Wales; and from their riches and eſtates have been called by the people *Barrymore* or the Great Barry

17. "Or a Feſs couped Gules, between two Lions paſſant Sable;" borne by the right hon. Samuel Maſham, lord Maſham, &c. This noble lord is deſcended from Sir John Maſham, who flouriſhed in the reign of king Henry VI. and was buried at Thorneham, in the county of Suffolk, in 1455.

18. "Argent, a Lion rampant guardant Gules, debruiſed by a Feſs Azure, between three Etoiles iſſuing out of as many Creſcents of the ſecond;" borne by the right hon. Robert Dillon, earl of Roſcommon, &c. in the kingdom of Ireland. This noble family is derived from Logan, ſurnamed *Dilune*, or *Delion*, which ſignifies brave and valiant, to whom the duke of Aquitaine gave his daughter in marriage, in whoſe right, after her father's death, he became prince and ſovereign of Aquitaine, which continued in his poſterity till Henry II. married Alionora, daughter and heir to William V. duke of Aquitaine, and about 1172 obtained that principality by ſuperior force; and, to prevent any diſturbance, brought Sir Henry Delion or Dillon, and his brother Thomas, then infants, to England, their father being ſlain.

19. "Or, two Bars Azure, a Chief quarterly of the ſecond and Gules, the 1ſt and 4th charged each with two Fleur-de-lis of France; the 2d and 3d with a Lion of England; borne by his grace John Manners, duke of Rutland, marquis of Granby, &c. This chief was anciently Gules; and the charge thereon is an honorary augmentation, ſhowing his grace's deſcent from the blood-royal of king Edward IV.

20. "Barry of ten pieces Argent and Azure, over all ſix Eſcutcheons; 3, 2, 1, Sable, each charged with a Lion rampant of the firſt, armed, and langued Gules, a Creſcent for difference;" borne by the right hon. James Cecil, earl of Saliſbury, &c. This noble earl is deſcended from the famous *William Cecil* lord Burleigh, ſtateſman in the reign of Edward VI.

and Elizabeth. This great man left two ſons, Thomas and Robert, who were both made earls in one day, May 4. 1603. Robert, the younger ſon, anceſtor of the preſent noble lord, was created earl of Saliſbury in the morning; and Thomas, the eldeſt, earl of Exeter in the afternoon.

Art. V. Of the Cheveron.

The Cheveron, which repreſents two rafters of a houſe well jointed together, or a pair of compaſſes half open, takes up the fifth part of the field with the Engliſh, but the French give it the third. Its diminutives are, The cheveronel, which contains the half of a cheveron; and the couple-cloſe, which is the half of a cheveronel, that is, its breadth is but the fourth part of a cheveron. Leigh obſerves, that this laſt diminutive is never borne but in pairs, or with a cheveron between two of them. The French have but one diminution of this ordinary called *Etaye* containing the third part of its breadth.

Examples of Cheverons are given in fig. ix. viz.

Plate CCXXIX. 1. "Argent, a Cheveron Gules between three Torteaux;" borne by the right hon. Bennet Sherrard, earl of Harborough, &c. This noble earl is lineally deſcended from Scherard, who was poſſeſſed of manors and lands to a great value in the counties of Cheſhire and Lancaſhire in the reign of William the Conqueror. Geoffroy, another of this earl's anceſtors, was three times ſheriff of Rutlandſhire, in the reigns of king Edward IV. and king Richard III.

2. "Sable, a Cheveron between three Etailes Argent;" borne by the right hon. Marmaduke Langdale, lord Langdale. This noble lord is deſcended from the Langdales of Yorkſhire, who reſided at the town of Langdale, from whence they took their name, in the reign of king John; but his anceſtor, who makes the greateſt figure in hiſtory, is Sir Marmaduke Langdale who raiſed forces in the north of England in defence of king Charles I. was victorious in numberleſs battles and ſieges; and when his majeſty, by the united forces of England and Scotland, was at length overpowered, he attended king Charles II. in his exile, and returned to England with his majeſty at the reſtoration.

3. "Sable, a Cheveron between three Leopards Heads Or;" borne by the right hon. William Wentworth, earl of Strafford, &c. All genealogiſts agree, that the name of *Wentworth* is of Saxon original, and taken from the manor of Wentworth in Yorkſhire, where, in the reign of William the Conqueror, lived Reginald de Wenteworde, as it is ſpelt in doomſday-book.

4. "Argent, a Cheveron between three Griffons paſſant Sable, a Creſcent for difference;" borne by the right hon. Heneage Finch, earl of Ailesford, &c. This family is deſcended from Herbert Fitz-Herbert, earl of Pembroke, and chamberlain to king Henry I. They took the name of *Finch* in the reign of king Edward I. One of the anceſtors of the preſent earl was the right hon. Heneage Finch, earl of Nottingham, who was conſtituted lord high-chancellor of England in 1675; and lord high-ſteward on the trials of Philip earl of Pembroke, and William viſcount Stafford, in 1680.

5. "Azure, a Cheveron Ermine, between three Eſcalops Argent;" borne by the right hon. George Townſhend, viſcount Townſhend, &c. This family is of Norman extraction, and came into England about the time of the conqueſt. Charles, lord viſcount Townſhend, grandfather of the preſent viſcount, was appointed principal ſecretary of ſtate in the reign of king George I. in 1720, and continued ſo to the end of his majeſty's reign; when, upon reſigning the ſeals, they were returned to him again by his late majeſty king George II. who continued him in that honourable office to the year 1730.

6. "Azure, a Cheveron between three Mullets Or;" borne by the right hon. John Chetwind, viſcount Chetwind, &c. of the kingdom of Ireland. Of this family, which hath been of great antiquity in the county of Salop, taking their ſurname from Chetwynd in that county, was Adam de Chetwynd, who married Agnes daughter of John lord Lovel, baron of Dockinges, and lord of Minſter Lovel in Oxfordſhire; and by her had iſſue Sir John de Chetwynd, who, in the 37th of Henry III. had a charter of free-warren, thro' all his demeſne in the counties of Salop, Stafford, and Warwick.

7. "Argent, a Cheveron Gules, between three ſquare Buckles Sable;" borne by the right hon. Matthew Ducie-Morton, lord Ducie, &c. This noble lord is deſcended from the Ducies in Normandy. After they came into England, king Edward I. conferred on them the lordſhip of Morton in Staffordſhire, and ſeveral other lordſhips and manors, which the family enjoyed for many years. Sir Robert Ducie, one of his lordſhip's anceſtors, was lord-mayor of London in the reign of king Charles I. and though he lent his majeſty L.80,000, which was loſt by the king's being driven out of London, he died, however, worth L.400,000.

8. "Argent, a Cheveron Checky Gules, and of the Field, between three Bugle-horns ſtrung Sable, garniſhed of the ſecond;" borne by the right hon. lord Hugh Semple, lord Semple. The principal family of this name was Semple of Elliotſton in Renfrew, where they had large poſſeſſions and offices, as ſtewards and bailiffs under the family of Stewart, proprietors of that county before they came to the crown. The firſt lord Semple was Sir Robert, who, being much in favour with king James IV. was by him created lord Semple in 1489.

9. "Argent, a Cheveron engrailed between three Lions paſſant Sable;" borne by the right hon. and the reverend Philip Smithe, viſcount Strangford. One of this lord's anceſtor's was John Smithe, Eſq; who acquired a conſiderable eſtate whilſt he was farmer of the cuſtoms in the reign of Henry VIII. He left two ſons, John and Sir Thomas; which laſt was ſent ambaſſador by king James I. to the empreſs of Ruſſia.

10. "Quarterly Argent and Azure, a Cheveron engrailed counter-changed; borne by the name of *Chamber*.

11. "Party per Cheveron engrailed Gules and Argent, three Talbots Heads eraſed counter-changed;" borne by the right hon. Anthony Duncombe, lord Feverſham, &c. His lordſhip is deſcended from the Duncombes of Barley-end in Buckinghamſhire. Sir Charles Duncombe, uncle to the preſent lord, was lord-mayor of London in 1709; and this nobleman was

created lord Feverſham and Baron of Dowton in Wiltſhire, June 23. 1744.

12. " Paly of ſix, Argent and Gules, on a Cheveron Azure, three Croſs-croſlets Or ;" borne by the name of *Carpenter*, baron Carpenter, of Killaghy in Ireland. This ancient and noble family are of great antiquity in the county of Hereford, and have been lords of the manor of the Home in the pariſh of Delwyn, near the Weobly, for above 300 years. George, the firſt lord Carpenter, was ſo created May 4. 1719.

13. " Azure, on a cheveron Or, between three Beſants, a Bay Leaf Proper ;" borne by the right hon. James Hope, earl of Hopeton, &c. This noble family is deſcended from Henry Hope, a native of Holland, who, about two centuries ago, came over and ſettled in Scotland. Charles Hope, Eſq ; grandfather of the preſent earl, was created an earl by queen Anne, April 15. 1703.

14. " Vert, on a Cheveron between three Unicorns Heads eraſed Argent, horned and manned Or, three Mullets Sable ;" borne by the name of *Ker*, being the 1ſt and 4th quarters in the arms of his grace John Ker, duke of Roxburgh, &c. This ancient family is ſaid to come from Normandy. John Ker, marquis of Beaumont and Ceſford, the firſt duke of Roxburgh, was ſo created April 27. 1707.

15. " Azure, on a cheveron Or, between three Bears heads couped Argent, muzzled Gules, a Roebuck's head eraſed, between two Hands holding Daggers all proper ;" borne by the right hon. Donald Mackay, lord Reay. This family is ſaid to derive their deſcent from Alexander, a younger ſon of Ochonacker, who, about the end of the twelfth century, came from Ireland ; and the fourth in deſcent from him was Donald of Strathnavern, whoſe ſon was named *Y More* : and from him began the ſurname of *Mac Y*, *Mackie*, or *Mackay*. Donald, the firſt lord of this family, was created baronet in 1625, and on June 20. 1628, was created baron Reay of the county of Caithneſs, by Charles I.

16. " Ermine, on a Cheveron Azure, three Foxes Heads eraſed Or, and in a Canton of the ſecond a Fleur-de-lis of the third ;" borne by the right hon. Stephen Fox earl of Ilcheſter, &c. Of the family of Fox there have been many perſons of note living in the counties of Dorſet, Somerſet, Wilts, and Hants, particularly Richard Fox, biſhop of Wincheſter. His lordſhip was created lord Ilcheſter and baron Strangeways, May 11. 1741, 14 Geo. II. and earl of Ilcheſter in June 1756.

17. " Or, two Cheveronels Gules ;" borne by the right hon. John Monſon, lord Monſon. This noble lord is deſcended from John Monſon, who flouriſhed in the reign of king Edward III. from whom deſcended another John, who attended king Henry V. in his wars in France. Sir John Monſon, bart. father of the preſent lord, was created lord Monſon, May 28. 1728.

18. " Or, on a Feſs, between two Cheveronels Sable, three Croſs-croſlets of the firſt ;" borne by the right hon. George Walpole, earl of Orford, &c. This family took their name from Walpole in Norfolk, where they reſided before the conqueſt. Sir Robert Walpole was, in king George II.'s reign, elected knight of the garter in 1726, and created earl of Orford, February 9. 1741-2.

19. " Azure ; three Cheveronels interlaced Or, and a Chief of the laſt ;" borne by the name of *Fitz-Hugh*.

20. " Argent, three Cheveronels Gules, in Chief a Label Azure ;" borne by the right hon. William Wildman Barrington, viſcount Barrington, &c. This family is of Norman extraction ; in which dutchy, whilſt it continued annexed to the Engliſh crown, there were to be ſeen the remains of a caſtle bearing the name of *Chute* or *Shute*, and formerly in the family, with other monuments in ſeveral towns of that duchy. John Shute, the late viſcount Barrington, was in 1708 made a commiſſioner of the cuſtoms, and ſucceeded to the eſtates of Francis Barrington, Eſq ; and of John Wildman of the country of Berks, who made him their heir ; and, in purſuance of the will of the former, he took the name and arms of *Barrington*. On June 11. 1720, he was created viſcount Barrington.

ART. VI. Of the CROSS.

THE *Croſs* is an ordinary formed by the meeting of two perpendicular with two horizontal lines in the feſs-point, where they make four right-angles ; the lines are not drawn throughout, but diſcontinued the breadth of the ordinary, which takes up only the fifth part of the field when not charged ; but if charged, then the third. It is borne as well engrailed, indented, &c. as plain.

There is ſo great a variety of croſſes uſed in heraldry, that it would be a very difficult taſk to treat of them all. Guillim has mentioned 39 different ſorts ; De la Columbiere, 72 ; Leigh, 46 ; and Upton declares he dares not aſcertain all the various croſſes borne in arms, for that they are almoſt innumerable : therefore, as all their forms cannot be expected here, we will only take notice of ſuch as are moſt commonly ſeen at preſent in coats-of-arms. See Fig. x.

The firſt is " Quarterly, Ermine and Azure, a Croſs Or ;" borne by his grace Thomas Oſborne duke of Leeds, &c. This noble duke is deſcended from the honourable family of the Oſbornes of Aſhford, in the county of Kent ; Sir Thomas Oſborne, the grandfather to the preſent duke, was advanced to the peerage by King Charles II. Plate CCXXIX.

2. " Gules, a Croſs engrailed Argent, a Lozenge in the dexter-chief of the ſecond ;" borne by the right hon. Edward Leigh, lord Leigh. This family took their ſurname from the town of High-Leigh in Cheſhire, where they reſided before the Norman conqueſt. Sir Thomas Leigh, the firſt lord of this family, was created baron Leigh of Stonely, by king Charles I. on July 1. 1643.

3. " Gules, a Croſs Argent fretty Azure ;" borne by the right hon. Nicholas Taaffe, viſcount Taaffe, of Corran, &c. in Ireland. Of this noble and ancient family was Richard Taaffe, who lived in 1282 ; as in 1306 did John Taaffe, who was archbiſhop of Armagh ; and, in 1479, the order of the Garter being eſtabliſhed in Ireland, Sir Nicholas Taaffe was one of the firſt members ; and John, his ſon and heir, was created a baron and viſcount by Charles I. Auguſt 1. 1628.

"Sable, a Croſs raguly Or;" borne by the name of *Stoway*.

5. "Argent, on a Croſs Sable, a Leopard's face Or;" borne by his grace Henry Brydges duke of Chandos, &c. The anceſtors of this noble family took their name from the city of Bruges in Flanders; and one of them came over with William the Conqueror, and had a conſiderable ſhare in the victory obtained near Haſtings in Suſſex, 1066. James, the father of the preſent duke, was created viſcount Wilton and earl of Caernarvon, October 19. 1714; and marquis of Caernarvon and duke of Chandos,——30. 1719.

6. "Or, on a Croſs Sable, a patriarchal Croſs of the Field;" borne by the right hon. Thomas Veſey, baron of Knapton in the kingdom of Ireland. The truly noble family of Veſcey or Veſey, derives its origin from Charles the Great, king of France, and emperor of the weſt, who died at Aix-la-Chapelle in Germany, Jan. 28. 814. His lordſhip's father was created a peer April 10. 1750.

7. "Argent, on a Croſs Gules, five Eſcalops Or;" borne by the right hon. William Villiers earl of Jerſey, &c. This noble earl is deſcended from the family of Villiers in Normandy, ſome of whom came over to England with the Conqueror; ſeveral manors and lands in England being ſoon after granted to Pagan de Villiers, one of this earl's anceſtors. The firſt peer of this family was created a baron and viſcount, March 20. 1690.

8. "Sable, on a Croſs within a Bordure engrailed Or, five Pellets;" borne by the right hon. Francis Grenville, earl of Brooke and Warwick, &c. The anceſtors of this noble family are of Norman extraction, and came over with William the Conqueror, who conferred manors and lands on them in England, of a conſiderable value; and at length they obtained the government of the caſtle of Warwick, the preſent ſeat of the family. Sir Fulke, the firſt peer of this family, was created baron Brooke by king James I. Jan. 9. 1620.

9. "Argent, a Croſs botonny Sable;" borne by the name of *Winwood*.

10. "Or, a Croſs croſlet Gules;" borne by the name of *Taddington*.

11. "Azure, a Croſs potent fitchy Or." This enſign is ſaid to have been borne by Ethelred king of the Weſt Saxons; and croſſes of this ſort are frequently met with in coats-of-arms.

12. "Party per pale, Gules and Argent; a Croſs potent quadrate in the centre, between four Croſſes pattee counter-changed;" the arms of the epiſcopal ſee of Litchfield and Coventry. This ſee was originally fixed at Litchfield; from thence removed to Cheſter, and from both to Coventry. It contains the whole county of Stafford, except two pariſhes; all Derbyſhire; the better part of Warwickſhire, and near half Shropſhire; divided into the four archdeaconries of Coventry, Stafford, Derby, and Salop. The pariſhes are 557 in number; but, including chapels, they amount to 643.

"13. Azure, a Croſs moline Argent;" borne by his grace Cavendiſh Bentinck, duke of Portland, &c. This noble duke is deſcended from a very ancient and diſtinguiſhed family in the United Provinces of Holland, of which was William Bentinck, Eſq; who, in his youth was page of honour to William prince of Orange, afterwards William III. king of Great Britain, and, on the acceſſion of William and his conſort, was made groom of the ſtole, privy-purſe to his majeſty, lieutenant-general of his majeſty's army, &c. and alſo created baron of Cirenceſter, viſcount Woodſtock, and earl of Portland, April 19. 1689.

14. "Argent, a Croſs patonce Sable;" borne by the name of *Rice*.

15. "Sable, a Croſs patee Argent;" borne by the came of *Mapleſden*.

16. "Azure, a Croſs flowery Or;" borne by the name of *Cheney*.—This is ſaid to have alſo been the arms of Edwin, the firſt Chriſtian king of Northumberland.

17. "Argent, ſix Croſs croſlets fitchy 3, 2, 1, Sable, on a Chief Azure, two Mullets pierced Or;" borne by his grace Henry Clinton, duke of Newcaſtle, &c. This noble family is deſcended from Jeffrey de Clinton, lord chamberlain and treaſurer to king Henry I. grandſon to William de Tankerville, chamberlain of Normandy; from whom deſcended William de Clinton, chief Juſtice of Cheſter, governor of Dover caſtle, lord Warden of the king's foreſts ſouth of Trent. Edward lord Clinton, another of this noble earl's anceſtors, was conſtituted lord high-admiral of England for life, in the reign of queen Elizabeth, who created him earl of Lincoln, May 4. 1572.

18. "Gules, a Cheveron between ten Croſſes patee, ſix above and four below, Argent;" borne by the right hon. Frederick-Auguſtus Berkeley, earl of Berkeley, &c. This noble family is deſcended from Robert Fitz-Harding, who obtained a grant of Berkeley-caſtle in Glouceſterſhire, which the family ſtill inherits, and from whence they obtained the ſurname of *Berkely*, from Henry duke of Normandy, afterwards king of England; the ſaid Robert Fitz-Harding was deſcended from the royal line of the kings of Denmark.

19. "Azure, three Mullets Or, accompanied with ſeven Croſs-croſlets fitchy Argent, three in Chief, one in Feſs, two in Flanks, and the laſt in Baſe;" borne by the right hon. James Somerville, lord Somerville. The firſt of this name on record is Sir Walter de Somerville, lord of Wichnore, in the county of Stafford, who came to England with William the Conqueror.

20. "Gules, three Croſſes recercelée, voided Or, a Chief vairy ermine and contre ermine;" borne by the right hon. John Peyto Verney, baron Willoughby de Broke. This noble lord is deſcended from William de Vernai, who flouriſhed in the reign of king Henry I. 1419.

ART. VII. Of the SALTIER.

THE Saltier, which is formed by the bend and bend-ſiniſter croſſing each other in right angles, as the interſecting of the pale and feſs forms the croſs, contains the fifth part of the field; but if charged, then the third. In Scotland, this ordinary is frequently called a *St Andrew's croſs*. It may like the others, be borne engrailed, wavy, &c. as alſo between charges or charged with any thing. See examples fig. xi. N° 1.

Nº 1. is "Argent, a Saltier Gules;" borne by his grace James Fitz-Gerald, duke of Leinceſter, &c. This noble lord is deſcended from Otho, or Other, a rich and powerful lord in the time of king Alfred, deſcended from the dukes of Tuſcany; who paſſing from Florence into Normandy, and thence into England, there the family flouriſhed, until Richard Strongbow, earl of Pembroke, their kinſman, engaged them to partake in his expedition to Ireland, in which Maurice Fitz-Gerald embarked, and was one of the principal conquerors of that kingdom, for which he was rewarded with a great eſtate in lands in the province of Leinſter, and particularly the barony of Offaley, and the caſtle of Wicklow; and died, covered with honours, in the year 1177, 24 Henry II.

2. "Gules, a Saltier Argent, between twelve Croſs croſlets Or;" borne by the right hon. Other-Lewis Windſor Hickman, earl of Plymouth, &c. This noble earl is deſcended from Robert Fitz-Hickman, lord of the manor of Bloxham, Oxfordſhire, in the 56 Hen. III 1272; and he is maternally deſcended from the noble family of the Windſors, who were barons of the realm at the time of the conqueſt.

3. "Vert, a Saltier wavy Ermine;" borne by the name of *Wakeman* of Hockford, in Glouceſterſhire.

4. "Ermine, a Saltier counter-compony Or and Gules;" borne by the name of *Ulmſtone*.

5. "Argent, a Saltier Azure with a Bezant in the centre;" borne by the right hon. Philip Yorke, earl of Hardwicke, &c. He was in October 1733 conſtituted lord chief-juſtice of the king's bench, and November 23. in the ſame year, created baron Hardwicke of Hardwicke.

6. "Argent on a Saltier Gules an Eſcalop Or;" the arms of the biſhoprick of Rocheſter—This dioceſe, the leaſt in England, comprehends only a ſmall part of Kent, in which there are 150 churches and chapels; and the two pariſhes in Iſelham in Cambridgeſhire, and Frekenham in Suffolk. It has only one archdeacon, that of Rocheſter. For many years it was in the immediate patronage of the archbiſhop of Canterbury.

7. "Party per Saltier, Azure and Argent, on a Saltier Gules, a Creſcent of the ſecond for difference;" quartered by the right hon. William Hall Gage, viſcount Gage, of Caſtle-Iſland in Ireland. This noble family is of Norman extraction, and derives deſcent from de Gaga or Gage, who attended William I. in his expedition to England; and, after the conqueſt thereof, was rewarded with large grants of lands in the foreſt of Dean, and county of Glouceſter, near which foreſt he fixed his reſidence, by building a ſeat at Clerenwell, in the ſame place where the houſe of Gage now ſtands: he alſo built a great houſe in the town of Cirenceſter, at which place he died, and was buried in the abbey there. Sir Thomas Gage, the eighth baronet, was created baron of Caſtle-Bar, and viſcount Gage, 1721.

8. "Gules, on a Saltier Argent, a Roſe of the firſt barbed and ſeeded proper;" borne by the right hon. George Neville, lord Abergavenny, premier baron of England.

9. "Or, on a Saltier Azure, nine Lozenges of the firſt;" the paternal arms of the right hon. John Dalrymple, earl of Stair, &c. Of this family, which took their ſurname from the barony of Dalrymple, lying on the river Dun in Ayrſhire, Scotland, was Adam de Dalrymple, who lived in the reign of Alexander III.

10. "Argent, on a Saltier engrailed Sable, nine Annulets Or;" borne by the name of *Leak*.

11. "Gules, a Saltier between four Creſcents Or;" borne as the ſecond and third quarters in the coat of-arms of the right honourable Charles Kinnaird, lord Kinnaird. George Kinnaird, Eſq; one of the preſent lord's anceſtors, being of great ſervice to king Charles II. during the uſurpation of Oliver Cromwell, he was by that prince, at his reſtoration, made one of the privy council; and December 28. 1682, created a baron.

12. "Argent, a Saltier engrailed between four Roſes Gules," for Lennox; and borne at firſt and fourth quarters in the coat-of-arms of the right hon. Francis Napier, lord Napier. This family is ſaid to be deſcended from the ancient thanes or ſtewards of Lennox in Scotland, but took their ſurname of Napier from the following event. King David II. in his wars with the Engliſh, about the year 1344, convocating his ſubjects to battle, the earl of Lennox ſent his ſecond ſon Donald, with ſuch forces as his duty obliged him; and, coming to an engagement, where the Scots gave ground, this Donald, taking his father's ſtandard from the bearer, and valiantly charging the enemy with the Lennox men, the fortune of the battle changed, and they obtained the victory; whereupon every one advancing, and reporting their acts, as the cuſtom was, the king declared they had all behaved valiantly, but that there was one among them who had *na pier*, that is, no equal; upon which the ſaid Donald took the name of Napier, and had, in reward for his good ſervices, the lands of Goſfield, and other eſtates in the county of Fife.

13. "Gules, a Saltier Or, ſurmounted of another Vert," for the name of *Andrews*; and borne by Sir William Andrews, bart. of Denton in Northamptonſhire, who is deſcended from Sir Robert Andrews of Normandy, knight, who came into England with William the Conqueror. Sir William Andrews, the firſt baronet of this family, was created December 11. 1641.

14. "Azure, a Saltier quarterly quartered Or and Argent." The arms of the epiſcopal ſee of Bath and Wells.—The dioceſe of Bath and Wells contains all Somerſetſhire, except a few churches in Briſtol. And in it there are three archdeaconries, viz. thoſe of Wells, Bath, and Taunton. The number of pariſhes is 388, though, according to ſome, the total number of the churches and chapels amounts to 503.

15. "Party per Saltier Argent and Gules, a Saltier counter-changed."

16. "Party per Pale indented Argent and Sable, a Saltier counter-changed;" borne by the name of *Scote*.

17. "Argent, three Saltiers couped and engrailed Sable;" borne by the name of *Benton*.

18. "Argent, a Saltier Gules, and a Chief Ermine;" borne by the right hon. Francis Thomas Fitzmaurice, earl of Kerry, &c. This very ancient and noble family is a branch of the family of Kildare, who are originally deſcended from the great duke of Tuſcany, and of which was Otho, a noble baron of Italy, whoſe ſon Walter, attending the Norman conqueror into

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into England, was made conſtable of the caſtle of Windſor. Raymond, one of the preſent earl's anceſtors, had a principal hand in the reduction of Ireland to the ſubjection of Henry II. and Dermoid Mac-Carty, king of Cork, ſought his aid againſt his ſon Cormac O'Lehanagh, which he undertook, and delivered the king from his rebellious ſon; for which that prince rewarded him with a large tract of land in the county of Kerry, where he ſettled his ſon Maurice, who gave his name to the county, which he called *Clan Maurice*, and is enjoyed by the preſent earl of Kerry, who is viſcount Clan Maurice. Thomas the firſt earl, and father of the laſt, was the 21ſt lord Kerry, who was created earl, January 17. 1722.

19. "Sable, a Saltier Argent, on a Chief Azure, three Fleurs-de-lis Or;" borne by the right hon. John Fitz-Patrick, earl of Upper Oſſory, and baron of Gowran in Ireland. This moſt ancient and princely family is deſcended from Heremon, the firſt monarch of the Mileſian race in Ireland; and after they had aſſumed the ſurname of Fitz-Patrick, they were for many ages kings of Oſſory, in the province of Leinſter. John, the firſt earl of this family, ſucceeded his father Richard, as lord Gowran, June 9. 1727, was created earl October 5. 1751, and died 1758.

20. "Party per Pale Argent and Gules, three Saltiers counter-changed;" borne by the name of *Lane*. Theſe arms are alſo borne, without the leaſt alteration, by the name of *Kingſman*; for which ſimilitude we can no otherwiſe account, than by ſuppoſing there has been ſome miſtake made through many tranſcriptions.

Sect. II. *Of Sub-Ordinaries.*

Besides the honourable ordinaries and the diminutions already mentioned, there are other heraldric figures called *ſub-ordinaries*, or *ordinaries* only, which, by reaſon of their ancient uſe in arms, are of worthy bearing, viz. The Gyron, Franc-quarter, Canton, Pairle, Fret, Pile, Orle, Ineſcutcheon, Treſſure, Annulet, Flanches, Flaſques, Voiders, Billet, Lozenge, Gutts, Fuſil, Ruſtre, Maſcle, Papillone, and Diaper. See Plate CCXXVII. fig. i. (A.)

The Gyron is a triangular figure formed by two lines, one drawn diagonally from one of the four angles to the centre of the ſhield, and the other is drawn either horizontal or perpendicular, from one of the ſides of the ſhield, meeting the other line at the centre of the field.

Gyronny is ſaid, when the field is covered with ſix, eight, ten, or twelve gyrons in a coat-of-arms: but a French author would have the true gyronny to conſiſt of eight pieces only, as in the fig. which repreſents the coat-of-arms of Flora Campbell counteſs of Loudon, &c. whoſe anceſtor was created baron of Loudon in 1604 by James VI. and earl of the ſame place, May 12. 1633, the 9th of Charles I.

The Franc-quarter is a ſquare figure, which occupies the upper dexter quarter of the ſhield. It is but rarely carried as a charge. Silveſtra Petra Sancta has given us a few inſtances of its uſe.

The Canton is a ſquare part of the eſcutcheon, ſomewhat leſs than the quarter, but without any fixed proportion. It repreſents the banner that was given to ancient knights-bannerets, and generally ſpeaking, poſſeſſes the dexter-chief-point of the ſhield, as in the fig.; but ſhould it poſſeſs the ſiniſter corner, which is but ſeldom, it muſt be blazoned a canton-ſiniſter.

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James Coats reckons it as one of the nine honourable ordinaries, contrary to moſt heralds opinion. It is added to coats-of-arms of military men as an augmentation of honour: thus John Churchill, baron of Eyemouth in Scotland, and one of the anceſtors of the preſent duke of Marlborough, being lieutenant general to king James II. received from him a canton argent, charged with the red croſs of England, added to his paternal coat, "which is Sable, a lion rampant Argent."

The Fret is a figure formed by the conjunction of the upper half of the ſaltier with the under half of the pale.

The pairle is a figure repreſenting two little ſticks, in ſaltier, with a maſcle in the centre interlaced. J. Gibbon terms it the *heralds true-lovers knot;* but many diſſent from his opinion.

Fretty is ſaid, when the field or bearings are covered with a fret of ſix, eight, or more pieces, as in the fig. The word *fretty* may be uſed without addition, when it is of eight pieces; but if there be leſs than that number, they muſt be ſpecified.

The pile, which conſiſts of two lines, terminating in a point, is formed like a wedge, and is borne engrailed, wavy, &c. as in the fig. It iſſues in general from the chief, and extends towards the baſe; yet there are ſome piles borne in bend, and iſſuing from other parts of the field, as may be ſeen in Plate CCXXX. fig. xii. nº 12. &c.

The Orle is an ordinary compoſed of two lines going round the ſhield, the ſame as the bordure, but its breadth is but one half of the latter, and at ſome diſtance from the brim of the ſhield, as in the fig.

The Ineſcutcheon is a little eſcutcheon borne within the ſhield; which, according to Guillim's opinion, is only to be ſo called when it is borne ſingle in the feſs-point or centre; ſee the fig. on Plate CCXXVII. but modern heralds, with more propriety give the name of *ineſcutcheon* to ſuch as are contained in Plate CCXXX. fig. xii. nº 2. and call that which is fixed on the feſs-point *eſcutcheon of pretence*, which is to contain the arms of a wife that is an heireſs, as mentioned above.

The *Treſſure* is an ordinary commonly ſuppoſed to be the half of the breadth of an orle, and is generally borne flowery and counter-flowery, as it is alſo very often double, and ſometimes treble. See the fig. (Plate CCXXVII.). This double treſſure makes part of the arms of Scotland, as marſhalled in the royal atchievement, Plate CCXXXII. fig. xxi. nº 7. and was granted to the Scots kings by Charlemagne, being then emperor and king of France, when he entered into a league with Achaius king of Scotland, to ſhow that the French lilies ſhould defend and guard the Scottiſh lion.

Plate CCXXVII

The Annulet, or ring, is a well-known figure, and is frequently to be found in arms through every kingdom in Europe.

The Flanches are formed by two curved lines, or ſemicircles, being always borne double. See the figure. C. Leigh obſerves, that on two ſuch Flanches two ſundry coats may be borne.

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The Flaſques reſemble the flanches, except that the circular lines do not go ſo near the centre of the field; (ſee the figure.) J. Gibbon would have theſe two ordinaries to be both one, and wrote *flank*; alleging, that the two other names are but a corruption of this laſt; but as G. Leigh and J. Guillim make them two diſtinct and ſubordinate ordinaries, we have inſerted them here as ſuch.

The Voiders are by Guillim conſidered as a ſubordinate ordinary, and are not unlike the flaſques (ſee the figure), but they occupy leſs of the field.

The Billet is an oblong ſquare figure, twice as long as broad. Some heralds imagine that they repreſent bricks for building; others more properly conſider them as repreſenting folded paper or letters.

The Lozenge is ordinary of four and equal parallel ſides, but not rectangular; two of its oppoſite angles being acute, and the other two obtuſe. Its ſhape is the ſame with thoſe of our window-glaſſes, before the ſquare came ſo much in faſhion. See the figure.

Gutts or drops, are round at bottom, waved on the ſides, and terminate at the top in points. Heralds have given them different names according to their different tinctures: thus, if they are

Yellow	they are called	*d' Or*
White		*d' Eau*
Red		*de Sang*
Blue		*de Larmes*
Green		*de Vert*
Black		*de poix*

The Fuſil is longer than the lozenge, having its upper and lower part more acute and ſharp than the other two collateral middle parts, which acuteneſs is occaſioned by the ſhort diſtance of the ſpace between the two collateral angles; which ſpace, if the fuſil is rightly made, is always ſhorter than any of the four equal geometrical lines whereof it is compoſed. See the fig. *ibid.*

The ruſtre is a lozenge pierced round in the middle (ſee the figure). They are called by the Germans *rutten*. Meneſtrier gives an example of them in the arms of Lebaret in France, argent three ruſtres azure.

The Maſcle is pretty much like a lozenge, but voided or perforated through its whole extent, ſhowing a narrow border, as in the figure. Authors are divided about its reſemblance: ſome taking it for the maſh of a net, and others for the ſpots of certain flints found about Rohan; and as no writer has given a clearer account in ſupport of this laſt opinion than Colombiere author of *La Science Heraldique*, we ſhall tranſcribe it for the ſatisfaction of the curious.

“Rohan (ſays he) bears Gules, nine Maſcles Or 3, 3, 3. Opinions have varied very much about the original of the maſcles or maſhes as being ſomewhat like the maſhes of nets: but for my own part, having often obſerved that thoſe things which are remarkable and ſingular in ſome countries, have ſometimes occaſioned the lords thereof to repreſent them in their eſcutcheons, and to take them for their arms, I am of opinion, that the lords of Rohan, who I believe, are the firſt that bore theſe figures in their arms, tho' deſcended from the ancient kings and princes of Bretagne, took them, becauſe in the moſt ancient viſcounty of Rohan, afterwards erected into a dutchy, there are abundance of ſtrong flints, which being cut in two, this figure appears on the inſide of them; as alſo the carps, which are in the fiſh-ponds of that duchy, have the ſame mark upon their ſcales: which being very extraordinary and peculiar to that country, the ancient lords of the ſame had good reaſon, upon obſerving that wonder, to take thoſe figures for their arms, and to tranſmit them to their poſterity, giving them the name of *macles*, from the Latin word *macula*, ſignifying a ſpot; whence ſome of that houſe have taken for their motto, *Sine macula macla*, that is, A maſcle without a ſpot.”

Papillone is an expreſſion uſed for a field or charge that is covered with figures like the ſcales of a fiſh. Monſ. Baron gives as an example of it the arms of Monti Gueules Papelone d'Argent. The proper term for it in Engliſh would be *ſcallop-work*.

Diapering is ſaid of a field or charge ſhadowed with flouriſhings or foliage with a colour a little darker than that on which it is wrought. The Germans frequently uſe it; but it does not enter into the blazoning or deſcription of an arms, it only ſerves to embelliſh the coat.

If the fore mentioned ordinaries have any attributes, that is, if they are engrailed, indented, wavy, &c. they muſt be diſtinctly ſpecified, after the ſame manner as the honourable ordinaries.

See examples of ſubordinaries, &c. fig. xii.

Plate. CCXXX.

1. “Gules, an Orle Ermine;” borne by the name of *Humframville*.

2. “Argent, three Ineſcutcheons Gules;” borne by the name of Hay, and the 2d and 3d quarters in the coat-of-arms of the right hon. Thomas Hay, earl of Kinnoul, &c.—The firſt of the name of Hay that bore theſe arms, got them, as Mr Niſbet obſerves, becauſe he and his two ſons, after having defeated a party of the Danes at the battle of Loncarty, *anno* 942, were brought to the king with their ſhields all ſtained with blood.

3. “Argent, a Fret Sable;” born by the right hon. Lionel Talmiſh, earl of Dyſart, &c. This family was advanced to the peerage by King Charles I. in 1646.

4. “Or, fretty of Gules, a canton Ermine,” borne by the right hon. Henry Noel, earl of Gainſborough, &c. This nobleman is deſcended from —— Noel who came into England with William the Conqueror, and in conſideration of his ſervices, obtained a grant of ſeveral manors and lands of very great value. Sir Edward, who was knighted by King James on his acceſſion to the throne, and created a baronet June 29, 1611, was the firſt advanced to the honour of baron Noel, March 23. 1616.

5. “Girony of eight Pieces or and Sable;” the 1ſt and 4th quarters of the coat-of-arms of the right hon. John Campbell, earl of Breadalbane, &c. This ancient and noble family is deſcended, in a regular ſucceſſion, from Duncan the firſt Lord Campbell, anceſtor of the family of Argyle. John, the firſt earl, in conſideration of his perſonal merit, was, from a baronet, created lord Campbell, viſcount Glenorchie, and earl of Breadalbane, Jan. 28. 1677, by Charles II.

6. “Lozengy Argent and Gules;” borne by the right hon. George Fitz-William, earl Fitz-William, &c. This noble earl is deſcended from Sir William

Fitz-William, marſhal of the army of William the Conqueror at the battle of Haſtings in Suſſex, by which victory that prince made his way to the throne.

7. “Sable, a Maſcle within a Treſſure flowery Argent;” borne by the name of *Hoblethorne*.

8. “Gules, three Mullets Or, within a Bordure of the latter, charged with a double Treſſure flowery and counter-flowery with Fleurs-de-lis of the firſt;” borne by the noble family of Sutherland, &c. This family in the peerage, is amongſt the oldeſt in Britain, if not in all Europe; the title of *earl* being conferred on one of their anceſtors in 1067.

9. “Azure, a Pile Ermine,” for the name of *Wyche*; and is quartered as firſt and fourth in the coat-of-arms of Sir Cyril Wyche, bart.

10. “Or, on a Pile engrailed Azure, three Croſs-croſlets fitchy of the firſt;” borne by the name of *Rigdon*.

11. “Or, on a Pile Gules three Lions of England between ſix Fleurs-de-lis Azure;” the firſt and fourth quarters of his grace Edward Seymour, duke of Somerſet, &c. granted him by King Henry VIII. on his marriage with the lady Jane Seymour.

12. “Ermine, two Piles iſſuing from the dexter and ſiniſter ſides, and meeting in baſe Sable;” for the name of *Holles*.

13. “Argent, three Piles, one iſſuing from the Chief between the others reverſed, Sable;” for the name of *Hulſe*, and borne by Sir Edward Hulſe, bart.

14. “Azure, a Pile wavy bendways Or;” borne by the name of *Aldham*.—There is no mention made of its iſſuing out of the dexter-corner of the eſcutcheon, for this is ſufficiently determined by the term *bendways*.

15. “Or, three Piles in Bend, each point enſigned with a Fleur-de-lis Sable:” borne by the name of *Norton*.

16. “Argent, three Piles meeting near the point of the Baſe Azure;” borne by the name of *Bryan*.

17. “Party per Pale and per Bend Or and Azure counterchanged;” borne by the name of *Johnſon*.—This bearing is equal to two gyrons; ſee p. 454. col. 1.

18. “Party per Pale and per Cheveron Argent and Gules counterchanged.”

19. “Party per Pale chappé Or and Vert counterchanged.” This is a bearing ſeldom to be met with.

20. “Party per Feſs Gules and Argent, a Pale counterchanged;” borne by the name of *Lavider*.

SECT. III. *Of COMMON CHARGES borne in Coats-of-arms.*

IT has been already obſerved, that in all ages men have made uſe of the repreſentation of living creatures and other ſymbolical ſigns to diſtinguiſh themſelves in war; and theſe marks, which were promiſcuouſly uſed for hieroglyphics, emblems, and perſonal devices, gave the firſt notion of heraldry. But nothing ſhows the extent of human wit more than the great variety of theſe marks of diſtinction, ſince they are compoſed of all ſorts of figures, ſome natural, others artificial, and many chimerical; in alluſion, it is to be ſupppoſed, to the ſtate, quality, or inclination of the bearer. Hence it is that the ſun, moon, ſtars, comets, meteors, &c. have been introduced to denote glory, grandeur, power, &c. Lions, leopards, tygers, ſerpents, ſtags, &c. have been employed to ſignify courage, ſtrength, prudence, ſwiftneſs, &c.

The application to certain exerciſes, ſuch as war, hunting, muſic, &c. has furniſhed lances, ſwords, pikes, arms, fiddles, &c. Architecture, columns, cheverons, &c.; and the other arts ſeveral things that relate to them.

Human bodies, or diſtinct parts of them, alſo clothes and ornaments, have for ſome particular intention, found place in armory; trees, plants, fruits, and flowers, have likewiſe been admitted to denote the rarities, advantages, and ſingularities, of different countries.

The relation of ſome creatures, figures, &c. to particular names, has been likewiſe a very fruitful ſource of variety in arms. Thus the family of Conningſby bears three coneys; of Arundel, ſix ſwallows; of Urſon a bear; of Lucie, three pikes, in Latin *tres lucios piſces*; of Starkey, a ſtork; of Caſtleman, a caſtle, triple-towered; of Shuttleworth, three weaver's ſhuttles, &c.

Beſides theſe natural and artificial figures, there are chimerical or imaginary ones uſed in heraldry, the reſult of fancy and caprice; ſuch as centaurs, hydras, phenixes, griffons, dragons, &c. Which great variety of figures ſhows the impoſſibility of comprehending all common charges in a work of this nature: therefore ſuch only ſhall be treated of as are moſt frequently borne in coats-of-arms.

ART. I. Of NATURAL FIGURES borne in coats-of-arms.

AMONG the multitude of natural things which are uſed in coats-of-arms, thoſe moſt uſually borne are, for the ſake of brevity as well as perſpicuity, diſtributed into the following claſſes, viz.

Celeſtial figures; as the ſun, moon, ſtars, &c. and their parts.

Effigies of men, women, &c. and their parts.

Beaſts; as, lions, ſtags, foxes, boars, &c. and their parts.

Birds; as, eagles, ſwans, ſtorks, pelicans, &c. and their parts.

Fiſhes; as, dolphins, whales, ſturgeons, trouts, &c. and their parts.

Reptiles and *Inſects*; as, tortoiſes, ſerpents, graſshoppers, &c. and their parts.

Vegetables; as, trees, plants, flowers, herbs, &c. and their parts.

Stones; as, diamonds, rubies, pebbles, rocks, &c.

Theſe charges have, as well as ordinaries, divers attributes or epithets, which expreſs their qualities, poſitions and diſpoſitions. Thus the ſun is ſaid to be *in his glory*, *eclipſed*, &c. The moon, *in her complement*, *increſcent*, &c. Animals are ſaid to be *rampant paſſant*, &c. Birds have alſo their denominations, ſuch as *cloſe*, *diſplayed*, &c. Fiſhes are deſcribed to be *hauriant*, *naiant*, &c.

I. *Examples of Celeſtial Figures.*

1. “Azure, a Sun in his Glory:” borne by the name of *St Clere*; and is found in the firſt and fourth quarters

Plate CCXXX. fig. 13.

Celeſtial Figures.

quarters of the coat-of-arms of the moſt noble William-John Ker, marquis of Lothian, &c. It is needleſs to expreſs the colour of the ſun, nothing being capable to denote it but gold.

2. "Azure, one Ray of the Sun, bendways Gules, between ſix Beams of that Luminary Argent ;" borne by the name of *Aldam.* There is no mention made of their iſſuing out of the dexter-corner of the eſcutcheon ; for this is implied in the term *bendways,* for the reaſon mentioned before.

3. "Argent, five Rays of the Sun iſſuing out of the ſiniſter-corner Gules ;" borne by the name of *Mudtſhideler,* a family of diſtinction in Franconia.

4. "Or, a Sun eclipſed." This bearing is ſeldom to be met with, except in emblematic or hieroglyphic figures ; and might be expreſſed *Sable,* becauſe that hue is accidental and not natural.

5. "Gules, the Moon in her complement Or, illuſtrated with all her light proper." This is ſufficient without naming the colour, which is *Argent.*

6. "Azure, a Moon decreſcent proper ;" borne by the name of *Delaluna.*

7. "Gules, a Moon increſcent Or ;" borne by the name of *Deſcus.*

8. "Argent, a Moon in her *detriment,* Sable." This word is uſed in heraldry to denote her being *eclipſed.*

9. "Azure, a Creſcent Argent ;" borne by the name of *Lucy.* This bearing is alſo uſed as a difference, it being aſſigned to the ſecond ſon, as beforementioned.

10. "Gules, three Creſcents Argent ;" borne by Oliphant, lord Oliphant (at preſent dormant). Amongſt the anceſtors of this noble family was David de Oliphant, one of thoſe barons who, in 1142, accompanied King David I. into England with an army, to aſſiſt his niece Matilda againſt King Stephen ; but after raiſing the ſiege of Wincheſter, the ſaid King David was ſo cloſely purſued, that, had it not been for the ſingular conduct of this brave perſon, the king would have been taken priſoner.

11. "Azure, a Creſcent between three Mullets Argent ;" borne by Arbuthnot, viſcount and baron Arbuthnot. In the year 1105, the firſt of this family marrying a daughter of the family of Oliphard, ſheriff of the county of Kincardin, with her he had the lands of Arbuthnot in that county, from whence he took his ſurname. Robert Arbuthnot was the firſt of this family who, for his loyalty to King Charles I. was, Nov. 16. 1641, dignified with the title of *baron* and *viſcount Arbuthnot.*

12. "Gules, a Star iſſuing from between the Horns of a Creſcent Argent."

13. "Azure, a Star of 16 points Argent ;" borne by the name of *Huitſon.*

14. "Argent, three Mullets pierced Sable ;" borne by the name of *Wollaſton.*

15. "Azure, ſix Mullets 3, 2, 1, Or ;" borne by the name of *Welſh.*

16. "Ermine, a Mullet of ſix points Gules, pierced ;" borne by the name of *Heſſenbul.*—When a mullet has more than five points, their number muſt, in blazoning, be always named.

17. "Argent, a Rainbow with a Cloud at each end proper." This is part of the creſt to the earl Hopeton's coat-of-arms, which is inſerted in fig. ix. n° 13. The whole of it is a globe ſplit on the top, and above it is the rain-bow, &c.

Effigies of Men.

18. "Party per Feſs crenelle Gules and Azure, three Suns proper ;" borne by the name of *Pierſon.*

19. "Gules, a Mullet between three Creſcents Argent ;" borne by the name of *Oliver.*

20. "Gules, a Chief Argent, on the lower part thereof a Cloud, the Sun's reſplendent rays iſſuing throughout proper ;" borne by the name of *Leeſon.*

II. *Examples of Effigies of Men, &c. and their parts.*

Fig. 14.

1. "Azure, the Virgin Mary crowned, with her Babe in her right arm, and a ſceptre in her left, all Or ;" the coat of arms of the biſhopric of Saliſbury.

2. "Azure, a Preſbyter ſitting on a Tomb-ſtone, with a Crown on his head and Glory Or, his right hand extended, and holding in his left an open Book Argent, with a Sword croſs his mouth Gules :" the coat of arms of the biſhopric of Chicheſter.

3. "Azure, a Biſhop habited in his pontificals, ſitting on a chair of ſtate, and leaning on the ſiniſter ſide thereof, holding in his left hand a Croſier, his right being extended towards the dexter chief of the eſcutcheon, all Or, and reſting his feet on a cuſhion, Gules, taſſeled of the ſecond ;" the coat of arms of the biſhopric of Clogher in Ireland.

4. "Azure, a Biſhop habited in his pontificals, holding before him, in a Pale, a Crucifix proper ;" the coats of arms of the biſhopric of Waterford in Ireland.

5. "Or, a Man's Leg couped at the midſt of the thigh Azure ;" borne by the name of *Haddon.*

6. "Azure, three ſiniſter Hands couped at the wriſt, and erected Argent ;" borne by the ancient family of Malmains.

7. "Argent, three ſiniſter Hands couped at the wriſt, and erected Gules ;" borne by the name of *Maynard.*—By theſe two laſt examples it appears, that different coats of arms may be eaſily made from the ſame figure or figures, by varying the colours only, without the addition of any other charge, counter-changings, partings, &c.

8. "Argent, a Man's Leg eraſed at the midſt of the thigh Sable ;" borne by the name of *Prime.*

9. "Gules, three Legs armed proper, conjoined in the Feſs-point at the upper part of the thighs, flexed in triangle, garniſhed and ſpurred, Or." This is the coat of arms of the Iſle of Man ; and is quartered by the Moſt noble John Murray, duke of Athol, titular lord or king of that iſle.

10. "Gules, three dexter Arms vembraced feſsways in Pale proper ;" borne by the name of *Armſtrong.* This coat is very well adapted to the bearer's name, and ſerves to denote a man of excellent conduct and valour.

11. "Or, three Legs couped above the knee Sable ;" borne by the name of *Hoſy.*

12. "Vert, three dexter Arms conjoined at the ſhoulders in the Feſs-point, and flexed in triangle Or, with fiſts clenched Argent ;" borne by the name of *Tremain.*

13. Argent, a Man's Heart Gules, within two equilateral triangles interlaced Sable ;" borne by the name of *Villages,* a family of diſtinction in Provence.

14. "Azure, a ſiniſter Arm, iſſuing out of the dexter-

Poſitions of Lions.

dexter-chief, and extended towards the ſiniſter-baſe Argent.”

15. “Argent, a dexter Hand couped at the wriſt and erected, within a bordure engrailed Sable;” borne by the name of *Manley*.

16. “Argent, a Man's Heart Gules, enſigned with a Crow Or, and on a Chief Azure, three Mullets of the firſt.” The paternal coat of the name of *Douglas*, and quartered in the arms of the dukes of Hamilton and Queenſberry; as alſo in thoſe of the earls of Morton and March, and the lord Mordington.

17. “Gules, a Saracen's Head affrontée eraſed at the neck Argent, environed about the temples with a wreath of the ſecond and Sable;” borne by the name of *Mergith*.

18. “Argent, three Blackamoors Heads couped proper, banded about the head Argent and Gules;” borne by the name of *Tanner*.

19. “Gules, three Beſants, each charged with a man's face affrontée proper;” borne by the name of *Gamin*.

20. “Or, a Blackamoor's Head couped proper, banded about the head Argent;” borne by the name of *Uſtoc*.

Obſerve, that when half of the face, or little more, of human figures, is ſeen in a field, it is then ſaid to be *in profile*; and when the head of a man, woman, or other animal, is repreſented with a full face, then it is termed *affrontée*.

III. *Examples of the different Poſitions of Lions, &c. in Coats-of-Arms.*

Plate CCXXXI. fig. 5.

1. “Or, a Lion rampant Gules;” quartered by Percy, duke of Northumberland; &c.

2. “Azure, a Lion rampant-guardant Or;” borne by the name of *Fitz-Hammond*.

3. “Gules, a Lion rampant-reguardant Or;” quartered by Cadogan, lord Cadogan, &c.

4. “Ermine, a Lion ſaliant Gules;” borne by the name of *Worley*.

5. “Azure, a Lion ſtatant-guardant Or;” borne by the name of *Bromfield*.

6. “Or, a Lion paſſant Gules; borne by the name of *Games*.

7. “Argent, a Lion paſſant-guardant Gules, crowned Or;” quartered by the right hon. James Ogilvy, earl of Finlater, &c.

8. “Gules, a Lion ſejant Argent.”

9. “Or, a Lion rampant double-headed Azure;” borne by the name of *Maſon*.

10. “Sable, two Lions rampant-combatant Or, armed and langued Gules;” borne by the name of *Carter*.

11. “Azure, two Lions rampant-adoſſée Or.” This coat of arms is ſaid to have been borne by Achilles at the ſiege of Troy.

12. “Sable, two Lioncels counter-paſſant Argent, the uppermoſt towards the ſiniſter ſide of the eſcutcheon, both collared Gules;” borne by the name of *Glegg*.—It is the natural diſpoſition of the Lion not to bear a rival in the field: therefore two lions cannot be borne in one coat of arms, but muſt be ſuppoſed to be lion's whelps called *lioncels*; except when they are parted by an ordinary, as in fig. viii. nº 17. or ſo diſpoſed as that they ſeem to be diſtinctly ſeparated from each other, as in fig. xv. nº 20. In the two foregoing examples they are called *lions*, becauſe in the 10th they ſeem to be ſtriving for the ſovereignty of the field which they would not do unleſs they were of full growth: and in the 11th they are ſuppoſed to repreſent two valiant men, whoſe diſpute being accommodated by the prince, are leaving the field, their pride not ſuffering them to go both one way.

Poſitions of Lions.

13. “Argent, a Demi-lion rampant Sable;” borne by the name of *Mervin*.

14. “Gules, a Lion couchant between ſix Croſs-croſlets, three in Chief, and as many in Baſe, Argent;” for the name of *Tynte*; and is the firſt and fourth quarter of the arms of Sir Charles-Kemys Tynte, bart.

14. “Azure, a Lion dormant Or.”

15. “Or, out of the midſt of a Feſs Sable, a Lion rampant-naiſſant Gules;” borne by the name of *Emme*. This form of blazon is peculiar to all living things that ſhall be found iſſuing out of the midſt of ſome ordinary or other charge.

17. “Azure, three Lioncels rampant Or;” borne by Fienes, viſcount and baron Saye and Sele.

18. “Gules, a tricorporated Lion iſſuing from three parts of the Eſcutcheon, all meeting under one Head in the Feſs-point Or, langued and armed Azure;” borne by the name of *Crouchback*. This coat appertained to Edmund Crouchback earl of Lancaſter, in the reign of his brother king Edward I.

19. “Gules, a beſant between three Demi-lions rampant Argent;” borne by Bennet, earl of Tankerville, &c. This noble earl is deſcended from the family of the Bennets in Berkſhire, who flouriſhed in the reign of King Edward III. Charles, lord Oſſulſton, grandfather of the preſent earl, was created earl of Tankerville on October 19. 1714, by George I.

20. “Party per Pale Azure and Gules, three Lions rampant Argent;” borne by Herbert earl of Pembroke, &c. This noble family is deſcended from Henry Fitz-Roy, natural ſon to Henry I. Sir William Herbert, one of the anceſtors of the preſent earl, was maſter of the horſe to king Henry VIII. lord preſident of the marches of Wales, and knight of the garter. He was alſo, by that king, advanced to the dignity of baron Herbert of Caerdiff, Oct. 10, 1551. and the very next day created earl of Pembroke.—Obſerve, that if a lion, or any other beaſt, is repreſented with its limbs and body ſeparated, ſo that they remain upon the field at a ſmall diſtance from their natural places, it is then termed *Dehaché* or *couped in all its parts*; of which very remarkable bearing there is an inſtance in armory, which is, “Or, a Lion rampant Gules, dehaché, or couped in all its parts, within a double Treſſure flowery and counterflowery of the ſecond;” borne by the name of *Maitland*.

IV. *Examples of other Quadrupeds, and their Parts, borne in Coats-of-Arms.*

Fig. 16.

1. Sable, a Camel ſtatant Argent;” borne by the name of *Camel*.

2. “Gules, an Elephant ſtatant Argent, taſked Or.”

3. “Argent, a Boar ſtatant Gules, armed Or;” borne by the name of *Trewarthen*.

4. Sable, a Bull paſſant Or;” borne by the name of *Fitz-Geffrey*.

5. “Sable, three Nags Heads eraſed Argent;” borne

Different Animals.

borne by Blayney, baron Blayney of Monaghan, in Ireland. This noble family is deſcended in a direct line from Cadwallader, a younger ſon of the prince of Wales; and the firſt peer was Sir Edward Blayney, knight, who was created a baron by king James I. July 29. 1621.

6. “ Argent, three Boars Heads eraſed and erect Sable, langued Gules,” for the name of *Booth*.

7. “ Azure, three Boars Heads eraſed Or;” quartered by his grace Alexander Gordon duke of Gordon, &c. Of this great and noble family which took their ſurname from the barony of Gordon in the county of Berwick, there have been, beſides thoſe in North Britain, ſeveral of great diſtinction in Muſcovy; and in the time of king Malcolm IV. 1160, this family was very numerous, and flouriſhed in the county aforeſaid.

8. “ Argent, three Bulls Heads eraſed, Sable, armed Or;” borne by Skeffington, earl of Maſſareene, &c. of Ireland. This ancient and noble family derives its name from the village of Skeffington, in the county of Leiceſter, of which place Simon Skeffington was lord in the reign of Edward I. and from him deſcended Sir William Skeffington, knt. made ſo by king Henry VII.

9. “ Argent, two foxes counter-ſaliant, the dexter ſurmounted of the ſiniſter Gules; for the name of *Kadrod-Hard*, an ancient Britiſh family, from which is deſcended Sir Wynne, bart. who bears this quartered, ſecond and third, in his coat of arms.

10. “ Argent, three Bulls paſſant Sable, armed and unguled Or;” for Aſhley, and quartered by the right hon. Anthony-Aſhley Cooper, earl of Shafteſbury, &c. This noble earl is deſcended from Richard Cooper, who flouriſhed in the reign of king Henry VIII. and purchaſed the manor of Paulet in the county of Somerſet, of which the family are ſtill proprietors. But his anceſtor who makes the greateſt figure in hiſtory is Sir Anthony-Aſhley Cooper, who was created baron Aſhley of Winbourn April 20. 1661, and afterwards earl of Shafteſbury April 23. 1672.

11. “ Ermine, three Cats paſſant in Pale Argent;” for the name of *Adams*.

12. “ Gules, two Grehounds rampant Or, reſpecting each other;” borne by the name of *Dogget*.

13. “ Or, an Aſs's Head eraſed Sable;” borne by the name of *Hackwell*.

14. “ Gules, three Lions gambs eraſed Argent;” for the name of *Newdigate*.

15. “ Argent, three Lions Tails erected and eraſed Gules;” borne by the name of *Cork*.

16. “ Azure, a Buck's Head caboſſed Argent;” borne by Legge, earl of Dartmouth, &c. This noble family is deſcended from Signior de Lega, an Italian nobleman, who flouriſhed in Italy in the year 1297. What time the family came into England is uncertain; but it appears they were ſettled at Legge-place near Tunbridge in Kent, for many generations; and Thomas, one of their anceſtors, was twice lord-mayor of London, *viz.* in 1346 and 1353.

17. “ Argent, two Squirrels ſejant adoſſée Gules,” for the name of *Samwell*.

18. “ Gules, a Goat paſſant Argent;” borne by the name of *Baker*.

19. “ Sable, a Stag ſtanding at gaze Argent;” borne by the name of *Jones*, of Monmouthſhire.

20. “ Azure, three Holy Lambs Or;” borne by the name of *Row*.

Birds, Fiſhes, &c.

V. *Examples of Birds, Fiſhes, Reptiles, &c.*

1. “ Ermine, an Eagle diſplayed Sable;” borne by the name of *Beddingfield*. Fig. 17.

2. “ Gules, a Swan cloſe proper;” borne by the name of *Leigham*.

3. “ Argent, a Stork Sable, membered Gules;” borne by the name of *Starkey*.

4. “ Gules, a Pelican in her neſt with wings elevated, feeding her young ones Or; vulned proper;” borne by the name of *Carne*.

5. “ Argent three Peacocks in their pride proper;” borne by the name of *Pawne*.

6. “ Sable, a Goſhawk Argent, perching upon a ſtock in the Baſe-point of the Eſcutcheon of the ſecond armed, jeſſed, and belled Or;” borne by the name of *Weele*.

7. “ Or, a Raven proper;” borne by the name of *Corbet*.

8. “ Argent three Cocks Gules, creſted and jowlopped Sable, a Creſcent ſurmounted of a Creſcent for difference;” borne by Cockayne, viſcount Cullen, of Donegal in Ireland. Of this ancient family was Andreas Cockayne of Aſhburne in the county of Derby, who lived in the 28th year of Edward I. Charles, ſon to Sir William Cockayne lord-mayor of London, 1619, was the firſt who was advanced to the peerage, by Charles I. Auguſt 11. 1642.

9. “ Sable, a Dolphin naiant embowed Or;” borne by the name of *Symonds*. This animal is borne by the eldeſt ſon of the French king, and next heir to the crown, no other ſubject in that kingdom being permitted to bear it. In England, where that rule cannot take place, there are ſeveral families that have dolphins in their coats-of-arms.

10 “ Argent, three Whales Heads erect and eraſed Sable;” borne by the name of *Whalley*.

11. “ Gules, three Eſcallops Argent;” borne by Keppel, earl of Albemarle, &c. This family is deſcended from Arnold Jooſt van Keppel, a nobleman of the province of Gelderland in Holland, who came over into England with the prince of Orange in 1688, to whom he was then a page of honour, and afterwards maſter of the robes, and was by him created a peer of England, by the title of earl of Albemarle, in the duchy of Normandy in France, February 10. 1696.

12. “ Azure, three Trouts fretted in Triangle Argent;” borne by the name of *Troutbeck*.

13. “ Vert, a Graſshopper paſſant Or.”

14. “ Azure, three Bees two and one volant in pale Argent;” borne by the name of *Bye*.

15. “ Vert, a Tortoiſe paſſant Argent;” borne by the name of *Gawdy*.

16. “ Gules, an Adder nowed Or;” borne by the name of *Naithily*. Adders, ſnakes, and ſerpents are ſaid to repreſent many things, which being according to the fancy of the ancients, and a few modern authors who have adopted their opinions, it is needleſs to enlarge upon. It is certain they often occur in armory; but the nobleſt is that of the duchy of Milan, *viz.* “ Argent, a Serpent gliding in Pale Azure, crowned Or, vorant an Infant iſſuing Gules.” The occaſion of this bearing was this: Otho, firſt viſcount of Milan, going

Reptiles, Plants, &c.

going to the Holy Land with Godfrey of Bouillon, defeated and ſlew in ſingle combat the great giant Volux, a man of an extraordinary ſtature and ſtrength, who had challenged the braveſt of the Chriſtian army. The viſcount having killed him, took his armour, and among it his helmet, the creſt whereof was a ſerpent ſwallowing an infant, worn by him to ſtrike terror into thoſe who ſhould be ſo bold as to engage him.

17. “Ermine, a Roſe Gules barbed and ſeeded proper;” borne by Boſcawen viſcount Falmouth, &c. This noble lord is deſcended from Richard Boſcawen, of the town of Boſcawen, in the county of Cornwall, who flouriſhed in the reign of king Eward VI. Hugh, the firſt peer of this ancient family, was created baron of Boſcawen-Roſe, and viſcount Falmouth, on the 13th of June 1720, 6th of George I.

18. “Azure, three Laurel-leaves ſlipped Or;” borne by the name of *Leveſon*, and quartered by the right hon. Granville-Leveſon Gower, earl of Gower, &c.

19. “Azure, three Garbs Or;” borne by the name of *Cuming*. Theſe are ſheaves of wheat; but though they were barley, rye, or any other corn whatſoever, it is ſufficient, in blazoning, to call them *Garbs*, telling the tincture they are of.

20. “Gules, three Cinquefoils Argent;” borne by Lambart, baron of Cavan, &c. in Ireland. Of this ancient family, which is of French extraction, was Sir Oliver, who, in the reign of queen Elizabeth, attending the earl of Eſſex to Spain, was there knighted by him, and afterwards returning with that earl into Ireland, was, for his ſingular ſervice in the north againſt O'Neal earl of Tyrone, made camp-maſter general, and preſident of Connaught; and February 17. 1617, was created lord Lambart and baron of Cavan by king James I.

It muſt be obſerved, that trees and plants are ſometimes ſaid to be trunked, eradicated, fructuated, or raguled, according as they are repreſented in arms.

ART. 2. Of ARTIFICIAL FIGURES borne in Coats of Arms.

Artificial Figures.

AFTER the various productions of nature, artificial figures, the objects of arts and mechanics, claim the next rank. They may be diſtributed into the following claſſes, *viz.*

Warlike inſtruments; as ſwords, arrows, battering-rams, gauntlets, helmets, ſpears, pole-axes, &c.

Ornaments uſed in royal and religious ceremonies; as crowns, coronets, mitres, wreaths, croſiers, &c.

Architecture; as towers, caſtles, arches, columns, plummets, battlements, churches portculliſſes, &c.

Navigation; as ſhips, anchors, rudders, pendants, ſails, oars, maſts, flags, galleys, lighters, &c.

All theſe bearings have different epithets, ſerving either to expreſs their poſition, diſpoſition, or make: *viz.* ſwords are ſaid to be erect, pommeled, hilted, &c.; arrows, armed, feathered, &c.; towers covered, embattled, &c; and ſo on of all others, as will appear by the following examples.

Fig. 18.

1. “Sable, three Swords, their points meeting in the Baſe Argent, pommeled and hilted Or, a Creſcent in chief of the ſecond for difference;” borne by Powlet, duke of Bolton, &c. This noble duke is deſcended from Hercules lord of Tournon in Picardy, who came over to England with Jeffrey Plantagenet earl of Anjou, third ſon of king Henry II. and among other lands had the lordſhip of Paulet in Somerſetſhire conferred on him. William Powlet, the firſt peer of this illuſtrious and loyal family, was treaſurer of the houſehold to king Henry VIII. and by him created baron St John of Baſing, in the county of Southampton, March 9. 1538.

2. “Argent, three Battering-rams barways in Pale, headed Azure and hooped Or, an Annulet for difference;” borne by Bertie, earl of Abington, &c. The firſt of the family of Bertie that bore the title of earl of Abington was James Bertie lord Norris of Rycote, being created earl, November 30. 1682, by Charles II.

3. “Azure, three left-hand Gauntlets with their backs forward Or;” borne by Fane, earl of Weſtmoreland, &c. This noble earl is deſcended from the Fanes, an ancient family which reſided at Badſal in Kent, from which deſcended Francis Fane, ſon and heir of Sir Thomas Fane, knight, by Mary his wife, ſole daughter and heireſs to Henry Nevil lord Abergavenny, afterwards created baroneſs Deſpenſer. The ſaid Francis was a knight of the Bath; and in the reign of king James I. was created baron Burgherſh and earl of Weſtmoreland December 29. 1624.

4. “Azure, three Arrows their points in baſe Or;” borne by Archer, lord Archer, &c. This noble lord is deſcended from John de Archer, who came over from Normandy with William the Conqueror; and this family is one of the moſt ancient in Warwickſhire, being ſettled at Umberſlade in that county ever ſince the reign of Henry II. His lordſhip is the firſt peer; and was created lord Archer and baron of Umberſlade by king George II. July 14. 1747.

5. “Gules, two Helmets in chief proper, garniſhed Or, in a Baſe of a Garb of the third;” borne by Cholmondeley, earl of Cholmondeley, &c. This noble earl is deſcended from the ancient family of Egerton in Cheſhire, which flouriſhed in the time of the conqueſt, from whom alſo the duke of Bridgewater is deſcended. The firſt Engliſh peer of this branch was Hugh viſcount Cholmondeley of Kells, in Ireland, who, joining with thoſe who oppoſed the arbitrary meaſures of king James II. was on the acceſſion of king William and queen Mary created lord Cholmondeley of Nampt-wich, in the county of Cheſter.

6. “Argent, a Ship with its Sails furled up Sable;” quartered by Hamilton, earl of Abercorn, &c. The deſcent of this noble family is from that of the duke of Hamilton; for James, the fourth lord Hamilton and ſecond earl of Arran, marrying lady Margaret Douglas daughter of James the third earl of Morton, by her had four ſons, James, John, Claud, and David; whereof Claud was progenitor of the lord we are now ſpeaking of; and in conſideration of his merit and loyalty to Mary queen of Scots, James VI. created him lord Paiſley in 1591, as alſo earl of Abercorn, baron of Hamilton, &c. July 10. 1606.

7. “Or, an Anchor in pale Gules;” quartered by the moſt noble George Johnſton, marquis of Annandale, &c. The Johnſtons are an ancient and warlike family, and derive their ſurname from the barony of Johnſton in Annandale.

8. “Sable, three Spears heads erect Argent, imbrued Gules, on a chief Or, as many Pole-axes Azure;” borne by King, lord King, &c. Peter King, Eſq; the firſt lord of this ancient family, was choſen recorder of the city of London, July 27. 1708, and on the 12th of September

HERALDRY.

Fig. 15.

LIONS &C.

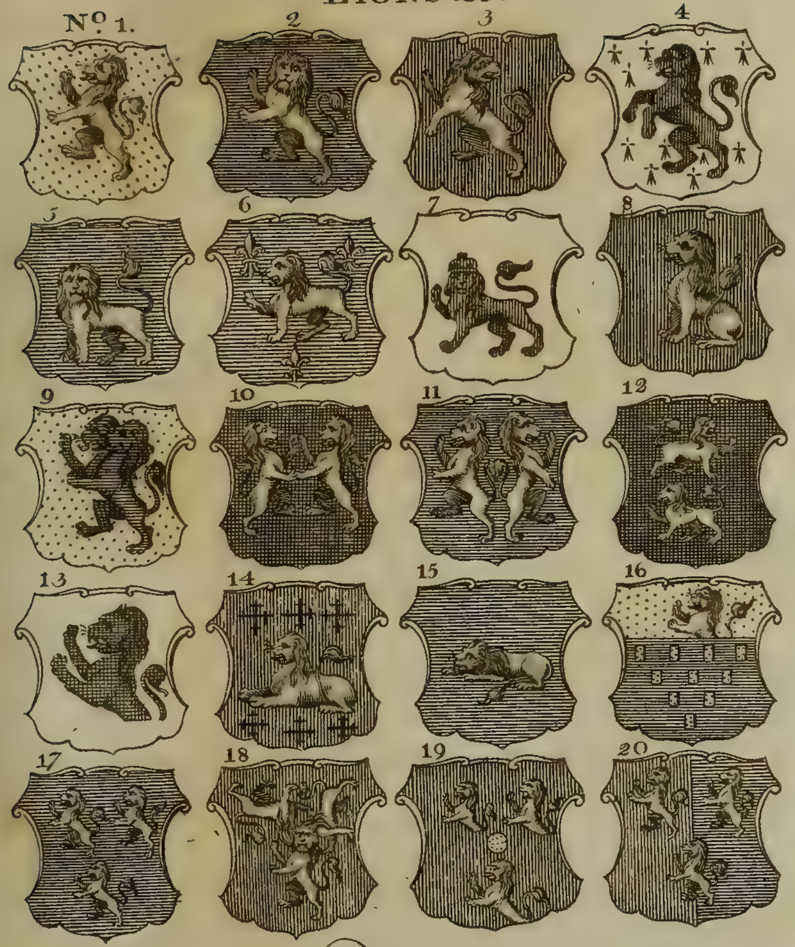


Fig. 16.

ANIMALS &C.

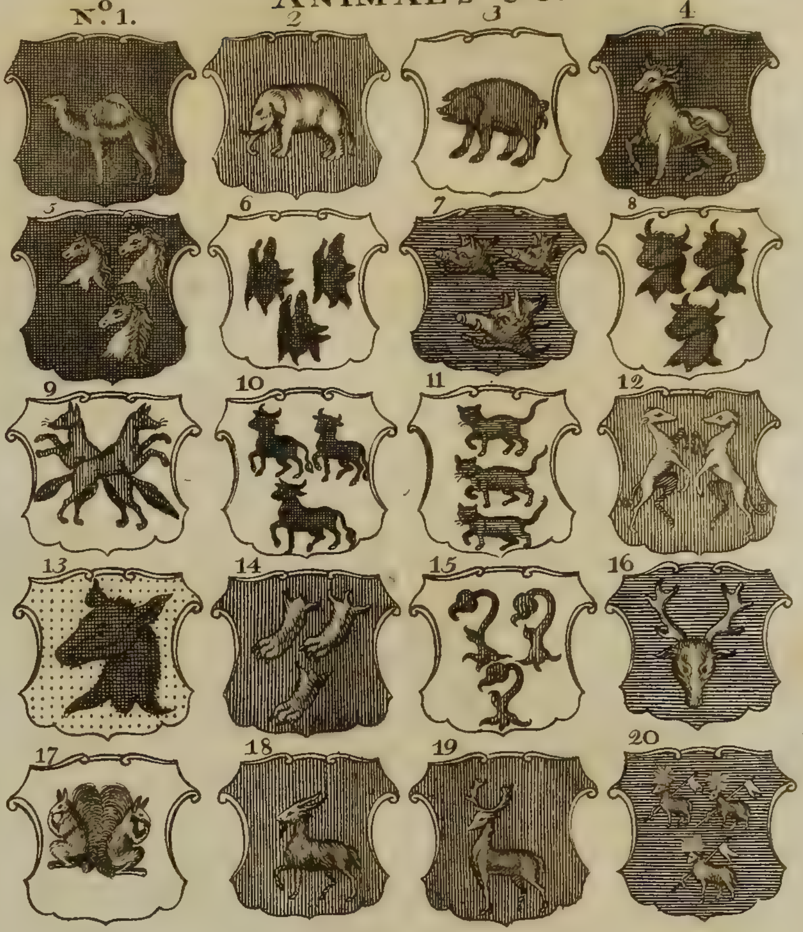


Fig. 17.

BIRDS &C.

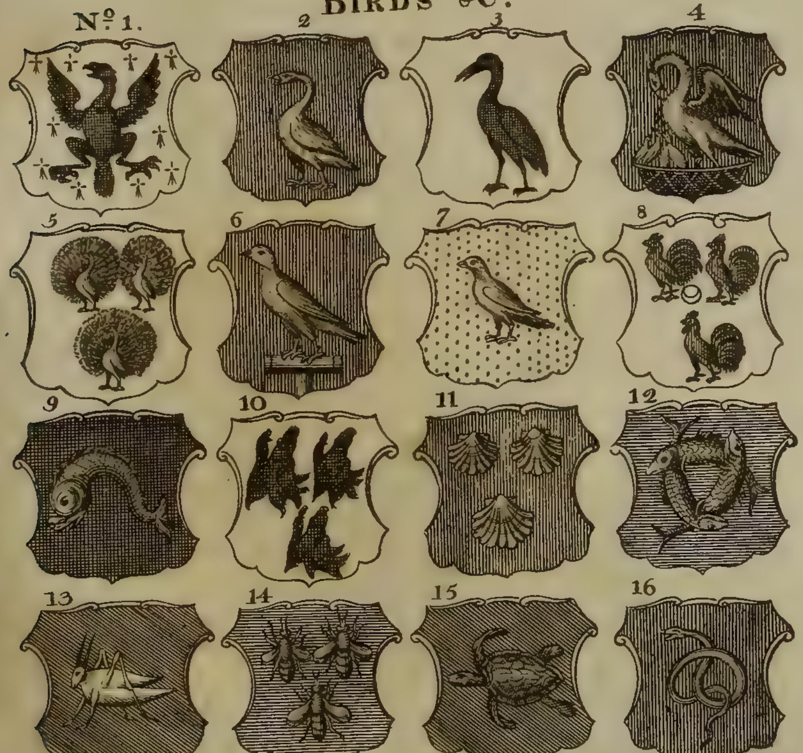
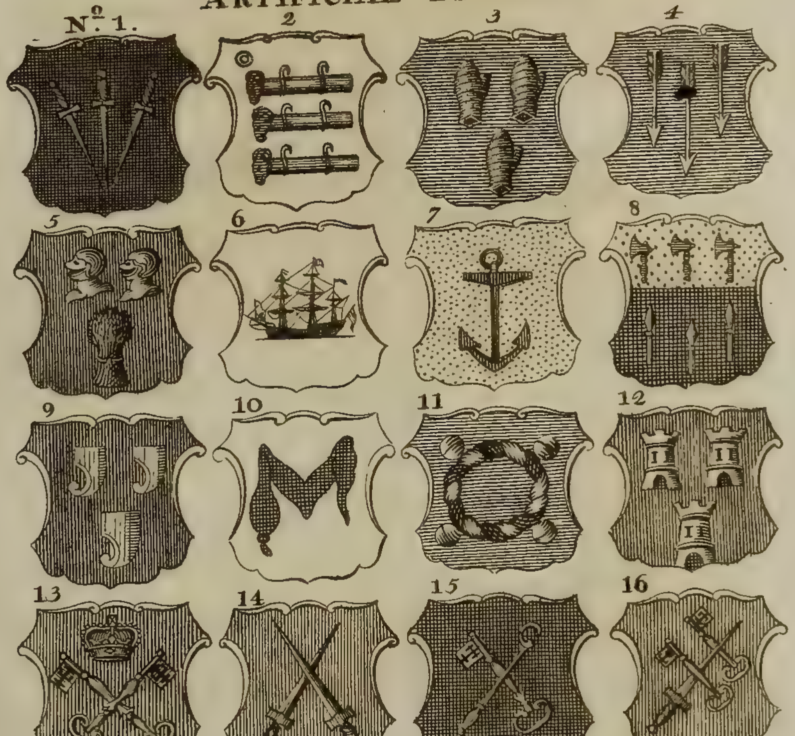


Fig. 18.

ARTIFICIAL FIGURES.



Trenchard Sculp.

September following had the honour of knighthood conferred on him. He was conſtituted lord-chief-juſtice of the common pleas in the firſt year of king George I. 1714; on the 5th of April following was ſworn of his majeſty's moſt hon. privy council; and on May 19. 1723, was created a peer of Great Britain by the title of lord King, baron of Ockham.

9. “Gules, three Clarions Or;” quartered by Carteret, earl of Granville, &c. this ancient and worthy family derives its pedigree from Offerey de Carteret, who attended William the conqueror in his deſcent upon England, and contributed to the victory he obtained over king Harold, at Haſtings in Suſſex, 1066, he had manors and lands in England conferred on him by that prince, as a reward for his eminent ſervices George the firſt earl was, in conſideration of his own merit and the ſervices of his anceſtors, created a peer of Great Britain, October 19. 1681.

10. “Argent, a Maunch Sable;” borne by Haſtings, earl of Huntingdon, &c. The preſent noble earl is deſcended from Hugh de Haſtings a younger ſon of the ancient and noble family of the Haſtings, earl of Pembroke, of which family was William de Haſtings, ſteward of the houſehold to king Henry I.—William, the firſt lord Haſtings, was created a baron on July 6. 1461, by king Edward IV.

11. “Azure, a circular Wreath Argent and Sable, with four Hawk's Bells joined thereto in quadrature Or;” borne by Jocelyn, viſcount Jocelyn, &c. This noble family is of great antiquity; for, after the Romans had been maſters of Britain 500 years, wearied with the wars, they took their final farewel of it, and carried away with them a great many of their brave old Britiſh ſoldiers, who had ſerved them at their wars both at home and abroad, to whom they gave Amorica in France, for their former ſervices, which country was from them afterwards called *Little Britain*. It is ſuppoſed that there were ſome of this family amongſt them; and that they gave the name of *Jocelyn* to a town in this country, which ſtill preſerves that name: and it is thought probable that they returned with William the Conqueror; for we find, in 1066, mention made of Sir Gilbert Jocelyn. This preſent nobleman the firſt lord of the family, was created baron Newport, of Newport in Ireland, on November 29. 1743, and viſcount in November 1751.

12. “Gules, three Towers Argent;” quartered by Fowler, viſcount Aſhbrook, &c. William Fowler, Eſq. was advanced to the peerage by king George II. and created baron of Caſtle-Durrow, in the county of Kilkenny, October 27. 1733; and his ſon was created viſcount Aſhbrook. of Aſhbrook in Ireland, on Sept. 30. 1751. now extinct.

13. “Gules, two Keys in Saltier Argent, in Chief a Royal Crown proper;” the arms of the archbiſhopric of York.

14. “Gules, two Swords in Saltier Argent, pommeled and hilted Or;” the arms of the biſhopric of London.

15. “Sable, a Key in Bend, ſurmounted by a Croſier in Bend ſiniſter, both Or;” the arms of the biſhopric of St Aſaph.

16. “Gules, two Keys adoſſée in Bend, the uppermoſt Argent, the other Or, a Sword interpoſed between them in bendſiniſter of the ſecond, pommelled and hilted of the third;” the arms of the biſhopric of Wincheſter.

17 “Gules, three Mitres with their pendants Or;” the arms of the biſhopric of Cheſter.

18. “Sable, three Ducal Coronets paleways Or;” the arms of the biſhopric of Briſtol.

19. “Gules, a Sword erect in a pale Argent, pommeled and hilted Or, ſurmounted by two Keys in Saltier of the laſt;” the arms of the biſhopric of Exeter.

20. “Gules, three Ducal Coronets, Or;” the arms of the biſhopric of Ely.

ART. III. Of CHIMERICAL FIGURES.

THE laſt and the oddeſt kind of bearings in coats of arms, is comprehended under the name of *chimerical figures*; that is to ſay, ſuch as have no real exiſtence, but are mere fabulous and fantaſtical inventions. Theſe charges, griffons, martlets, and unicorns excepted, are ſo uncommon in Britiſh coats, that in order to make up the ſame number of examples hitherto contained in each collection, ſeveral foreign bearings are introduced here; which, however, as they are conform to the laws of heraldry, will alſo contribute both to entertain and inſtruct the reader. Theſe moſt in uſe are the following, viz.

Angels, Cherubims, Tritons, Centaurs, Martlets, Griffons, Unicorns, Dragons, Mermaids, Satyrs, Wiverns, Harpies, Cockatrices, Phenixes.

Theſe, like the foregoing charges, are ſubject to various poſitions and diſpoſitions, which, from the principles already laid down, will be plainly underſtood. See the examples, fig. xix.

N° 1. is “Gules, an Angel ſtanding affrontée, with his hands conjoined and elevated upon his breaſt, habited in a long Robe cloſe girt Argent, his Wings diſplayed Or;” borne by the name of *Brangor de Cereviſia*, a foreign prelate, who aſſiſted at the council of Conſtance, 1412. This example is quoted by Guillim, Sect. III. Chap. i.

2. “Sable, a Cheveron between three Cherubim Or;” borne by the name of *Chaloner*, of Yorkſhire and Cheſhire.

3. “Azure, a Feſs indented between three Cherubim Argent.” Theſe arms were granted to John Ayde, Eſq; of Doddington in Kent, by Sir William Segar, garter.

4. “Gules, a Cherub having three pair of Wings, the uppermoſt and lowereſt counter-croſſed Saltierways, and the middlemoſt diſplayed Argent;” borne by the name of *Buocafoco*, a foreign prelate. This example is copied from Meneſtrier's *Methode du Blaſon*, p. 120, N° viii.

5. “Azure, a Griffon ſegreant Or, armed and langued Gules, between three Creſcents Argent;” quartered by Bligh, lord Clifton, &c. The anceſtor of this noble family, who lived in London, going over to Ireland in the time of Oliver Cromwell, as an agent to the adventurers there, acquired a good eſtate, and laid the foundation for the grandeur of this family.

6. “Gules, three Martlets Or;” borne by the name of *Macgill*. Guillim obſerves, that this bird, which is repreſented without feet, is given for a difference to younger brothers, to put them in mind, that, in order

to raiſe themſelves they are to truſt to their wings of virtue and merit, and not to their legs, having but little land to ſet their feet on.

7. "Azure, three Mullets Argent within a double Treſſure counter-flowery Or, in the centre a Martlet of the laſt;" borne by Murray, lord Elibank. Sir Gideon Murray, knighted by king James VI. by whom he was made treaſurer depute, was third ſon of Sir Andrew Murray of Blackbarony. His ſon Patrick, in reſpect of his loyalty to Charles I. was on May 16. 1628 made a baronet, and in 1643 created lord Elibank.

8. "Sable, a Cockatrice diſplayed argent, creſted, membered, and jowllopped Gules."

9. "Argent, a Mermaid Gules, crined or holding in her right hand a comb, and in her left a Mirror, both proper;" borne by the name of *Ellis*.

10. "Argent, a Wivern, his wings elevated, and his Tail nowed below him Gules;" borne by the name of *Drake*.

11. "Or, a Dragon paſſant Vert."

12. "Gules, a Centaur or Sagittary in full ſpeed reguardant proper." This was the coat of arms of Stephen ſurnamed of *Blois*, ſon to Adela daughter of William the Conqueror, and of Stephen earl of Blois; and on this deſcent grounding his pretenſion to the crown of England, he was proclaimed king in 1135, and reigned to the 25th of October 1154.

13. "Argent, an Unicorn ſejant Sable, unguled and horned Or;" borne by the name of *Harling*.

14. "Argent, a Dragon's Head eraſed Vert, holding in his mouth a ſiniſter Hand couped at the Wriſt Gules" borne by the name of *Williams*.

15. "Gules, three unicorns Heads couped Or;" borne by the name of *Paris*.

16. "Argent, a Wivern volant Bendways Sable;" borne by the name of *Raynon*.

17. "Azure, a Lion ſejant guardant winged Or, his Head encircled with a glory, holding in his fore-paws an open Book, wherein is written, *Pax tibi, Marce, Evangeliſta meus*; over the dexter ſide of the Book a Sword erect, all proper." Theſe are the arms of the republic of Venice.

18. "Azure, a bull ſaliant and winged Or;" borne by the name of *Cadenet*, a family of diſtinction of Provence.

19. "Argent, a Wivern with a human Face affrontée hooded, and winged vert;" borne by the name of *Buſeraghi*, an ancient and noble family of Luques.

20. "Azure, a Harpy diſplayed, armed, crined, and crowned Or." Theſe are the arms of the city of Noremberg in Germany,

To the forementioned figures may be added the montegre, an imaginary creature ſuppoſed to have the body of a tyger with a ſatyr's head and horns; alſo thoſe which have a real exiſtence, but are ſaid to be endowed with extravagant and imaginary qualities, viz. the ſalamander, beaver, cameleon, &c.

CHAP. IV.

Of the EXTERNAL ORNAMENTS *of* ESCUTCHEONS.

The ornaments that accompany or ſurround eſcutcheons were introduced to denote the birth, dignity, or office, of the perſons to whom the coat-of-arms appertaineth; which is practiſed both among the laity and clergy. Thoſe moſt in uſe are of ten ſorts, viz. Crowns, Coronets, Mitres, Helmets, Mantlings, Chapeaux, Wreaths, Creſts, Scrolls, Supporters.

SECT. I. *Of Crowns.*

THE firſt crowns were only diadems, bands, or fillets: afterwards they were compoſed of branches of divers trees, and then flowers were added to them.

Among the Greeks, the crowns given to thoſe who carried the prize at the Iſthmian games, were of pine; at the Olympick, of laurel; and at the Nemean, of ſmallage.

The Romans had various crowns to reward martial exploits and extraordinary ſervices done to the republic; for which ſee the detached article CROWN in this Dictionary, and Plate CL.

Examples of ſome of theſe crowns are frequently met with in modern atchievements, viz. 1. The *mural* crown in that of lord Montfort, which was conferred on Sir John Bromley, one of his lordſhip's anceſtors, as an augmentation to his arms, for his great courage at the battle of Le Croby. Part of the creſt of Lord Archer is alſo a mural crown. And there are no leſs than ten Engliſh baronets, whoſe arms are ornamented with the ſame crown. 2. The *naval* or roſtral crown is ſtill uſed with coats of arms, as may be ſeen in thoſe of Sir William Burnaby, bart. now admiral of the red ſquadron, and of John Clerke, Eſq; as part of their creſts. 3. Of the *caſtrenſe* or vallery crown, we have inſtances in the coat-of-arms of Sir Reginald Graham and of Iſaac Akerman, Eſq. 4. The creſt of Grice Blackeny, Eſq; is encompaſſed with a *civic* crown, 5. The *radiated* crown, according to J. Yorke, was placed over the arms of the kings of England, till the time of Edward III. It is ſtill uſed as a creſt on the arms of ſome private families; thoſe, for example, borne by the name of *Whitfield*, are ornamented with it. The celeſtial crown is formed like the radiated, with the addition of a ſtar on each ray; and is only uſed upon tomb-ſtones, monuments, and the like.—Others of the ancient crowns are ſtill borne, as creſts, by ſeveral families.

But modern crowns are only uſed as an ornament, which emperors, kings, and independent princes ſet on their heads, in great ſolemnities, both to denote their ſovereign authority, and to render themſelves more awful to their ſubjects. Theſe are the moſt in uſe in heraldry, and are as follows:

Plate CCXXXII fig. 20.

The imperial crown (nº 1.). is made of a circle of gold, adorned with precious ſtones and pearls, heightened with fleurs-de-lis, bordered and ſeeded with pearls, raiſed in the form of a cap voided at the top, like a creſcent. From the middle of this cap riſes an arched fillet enriched with pearls, and ſurmounted of a mound, whereon is a croſs of pearls.

The crown of the kings of Great Britain (2.) is a circle of gold, bordered with ermine, enriched with pearls and precious ſtones, and heightened up with four croſſes pattee and four large fleur-de-lis alternately; from theſe riſe four arched diadems adorned with pearls, which cloſe under a mound, ſurmounted of a croſs like thoſe at bottom. Mr Sandford, in his Genealogical Hiſtory, p. 381. remarks, that Edward

ward IV. is the firſt king of England that in his ſeal, or on his coin, is crowned with an arched diadem.

The crown of the kings in France (3.) is a circle enameled, adorned with precious ſtones, and heightened up with eight arched diadems, riſing from as many fleurs-de-lis, that conjoin at the top under double fleur-de-lis, all of gold.

The crowns of Spain, Portugal, and Poland, are all three of the ſame form, and are, amongſt others, thus deſcribed by colonel Parſons, in his Genealogical Tables of Europe, viz. A ducal coronet, heightened up with eight arched diadems that ſupport a mound enſigned with a plain croſs. Thoſe of Denmark and Sweden are both of the ſame form, and conſiſt of eight arched diadems, riſing from a marquis's coronet, which conjoin at the top under a mound enſigned with a croſs-bottony.

The crowns of moſt other kings are circles of gold, adorned with precious ſtones, and heightened up with large trefoils, and cloſed by four, ſix, or eight diadems, ſupporting a mound, ſurmounted of a croſs.

The Great Turk (4) bears over his arms a turband, enriched with pearls and diamonds, under two coronets, the firſt of which is made of pyramidical points heightened up with large pearls, and the uppermoſt is ſurmounted with creſcents.

The Pope, or biſhop of Rome, appropriates to himſelf a Tiara (n° 5.), or long cap of golden cloth, from which hang two pendants embroidered and fringed at the ends, *ſemée* of croſſes of gold. The cap is incloſed by three marquis's coronets; and has on its top a mound of gold, whereon is a croſs of the ſame, which croſs is ſometimes repreſented by engravers and painters pometted, recroſſed, flowery, or plain.—It is a difficult matter to aſcertain the time when theſe haughty prelates aſſumed the three forementioned coronets. A patched up ſucceſſion of the holy pontiffs, engraved and publiſhed a few years ago by order of Clement XIII. the late Pope, for the edification of his good ſubjects in Great Britain and Ireland, repreſents Marcellus, who was choſen biſhop of Rome anno 310, and all his ſucceſſors, adorned with ſuch a cap: but it appears, from very good authority, that Boniface VIII. who was elected into the ſee of Rome anno 1295, firſt compaſſed his cap with a coronet; Benedict XII. in 1335, added a ſecond to it; and John XXIII. in 1411, a third; with a view to indicate by them, that the Pope is the ſovereign prieſt, the ſupreme judge, and the ſole legiſlator amongſt Chriſtians.

SECT. II. *Of Coronets.*

THE Coronet of the prince of Wales, or eldeſt ſon of the king of Great Britain (n° 7.), was anciently a circle of gold ſet round with four croſſes-patee, and as many fleurs-de-lis alternately; but ſince the reſtoration, it has been cloſed with one arch only, adorned with pearls, and ſurmounted of a mound and croſs, and bordered with ermine like the king's.

Beſides the aforeſaid coronet, his royal highneſs the prince of Wales has another diſtinguiſhing mark of honour, peculiar to himſelf, called by the vulgar the *prince's arms*, viz. A plume of three oſtrich-feathers, with an ancient coronet of a prince of Wales. Under it, in a ſcroll, is this motto, *Ich Dien*, which in the German or old Saxon language ſignifies, "I ſerve;" (ſee n° 6). This device was at firſt taken by Edward prince of Wales, commonly called the *black prince*, after the famous battle of Creſſe, in 1349, where having with his own hand killed John king of Bohemia, he took from his head ſuch a plume, and put it on his own.

The coronet of all the immediate ſons and brothers of the kings of Great Britain, is a circle of gold, bordered with ermine, heightened up with four fleurs-de-lis and as many croſſes-pattee-alternate, (ſee n° 8). —The particular and diſtinguiſhing form of ſuch coronets as are appropriated to princes of the blood-royal, is deſcribed and ſettled in a grant of Charles II. the 13th of his reign.

The coronet of the princeſſes of Great Britain is a circle of gold, bordered with ermine, and heightened up with croſſes-pattee, fleurs-de-lis, and ſtrawberry leaves alternate (n° 9.): whereas a prince's coronet has only fleurs-de-lis and croſſes.

A duke's coronet is a circle of gold bordered with ermine enriched with precious ſtones and pearls, and ſet round with eight large ſtrawberry or parſly leaves; (n° 10).

A marquis's coronet is a circle of gold, bordered with ermine, ſet round with four ſtrawberry leaves and as many pearls on pyramidical points of equal height, alternate; (n° 11).

An earl's coronet is a circle of gold, bordered with ermine, heightened up with eight pyramidical points, or rays, on the tops of which are as many large pearls, and are placed alternately with as many ſtrawberry-leaves, but the pearls much higher than the leaves; (n° 12).

A viſcount's coronet differs from the preceding ones as being only a circle of gold bodered with ermine, with large pearls ſet cloſe together on the rim, without any limited number, which is his prerogative above the baron, who is limited; (ſee n° 13).

A baron's coronet, (n° 14). which was granted by king Charles II. is formed with ſix pearls ſet at equal diſtance on a gold circle bordered with ermine, four of which only are ſeen on engravings, paintings, &c. to ſhow he is inferior to the viſcount.

The eldeſt ſons of peers, above the degree of a baron, bear their father's arms and ſupporters with a label, and uſe the coronet appertaining to their father's ſecond title; and all the younger ſons bear their arms with proper differences, but uſe no coronets.

As the crown of the king of Great Britain is not quite like that of other potentates, ſo do moſt of the coronets of foreign noblemen differ a little from thoſe of the Britiſh nobility: as for example, the coronet of a French earl is a circle of gold with 18 pearls ſet on the brim of it: a French viſcount's coronet is a circle of gold only enamalled, charged with four large pearls; and a French baronet's coronet is a circle of gold enamelled and bound about with a double bracelet of pearls; and theſe coronets are only uſed on French noblemens coats-of-arms, and not worn on their heads, as the Britiſh noblemen and their ladies do at the king's coronation.

SECT. III. *Of Mitres.*

THE archbiſhops and biſhops of England and Ireland

Helmets.

land place a mitre over their coats-of-arms. It is a round cap pointed and cleft at the top, from which hang two pendants fringed at both ends ; with this difference, that the biſhop's mitre is only ſurrounded with a fillet of gold, ſet with precious ſtones, (ſee fig. 23. nº 6). whereas the archbiſhop's iſſues out of a ducal coronet, ſee fig. 20. nº 15).

This ornament, with other maſquerade garments, is ſtill worn by all the archbiſhops and biſhops of the church of Rome, whenever they officiate with ſolemnity ; but it is never uſed in England, otherwiſe than on coats-of-arms, as before mentioned.

Sect. IV. *Of Helmets.*

The Helmet was formerly worn as a defenſive weapon, to cover the bearer's head : and is now placed over a coat-of-arms as its chief ornament, and the true mark of gentility. There are ſeveral ſorts diſtinguiſhed, 1ſt, by the matter they are made of; 2dly, by their form ; and, 3dly, by their poſition.

1ſt, As to the matter they are, or rather were, made of ; The helmets of ſovereigns were of burniſhed gold damaſked ; thoſe of princes and lords, of ſilver figured with gold ; thoſe of knights, of ſteel adorned with ſilver ; and thoſe of private gentlemen, of poliſhed ſteel.

2dly, As to their form : Thoſe of the king and the royal family, and noblemen of Great Britain, are open-faced and grated, and the number of bars ſerves to diſtinguiſh the bearers quality ; that is, the helmet appropriated to the dukes and marquiſes is different from the king's, by having a bar exactly in the middle, and two on each ſide, making but five bars in all, (ſee fig. 21. nº 1). whereas the king's helmet has ſix bars, viz. three on each ſide, (ibid, nº 7.) The other grated helmet with four bars is common to all degrees of peerage under a marquis. The open-faced helmet without bars denotes baronets and knights. The cloſe helmet is for all eſquires and gentlemen.

3dly, Their poſition is alſo looked upon as a mark of diſtinction. The grated helmet in front belongs to ſovereign princes. The grated helmet in profile is common to all degrees of peerage. The helmet ſtanding direct without bars, and the beaver a little open, denotes baronets and knights. Laſtly, the ſide-ſtanding helmet, with the beaver cloſe, is the way of wearing it amongſt eſquires and gentlemen. See nº 1, 2, 3, 4, and 7, inſerted in fig. 21. *Ornaments*.

Sect. V. *Of Mantlings.*

Mantlings are pieces of cloth jagged or cut into flowers and leaves, which now-a days ſerve as an ornament for eſcutcheons. They were the ancient coverings of helmets to preſerve them, or the bearer from the injuries of the weather, as alſo to prevent the ill conſequences of their too much dazzling the eye in action. But Guillim very judiciouſly obſerves, that their ſhape muſt have undergone a great alteration ſince they have been out of uſe, and therefore might more properly be termed *flouriſhings* than *mantlings*. See the examples annexed to the helmets repreſented in fig. 21.

The French heralds aſſure us, that theſe mantlings were originally no other than ſhort coverings which commanders wore over their helmets, and that, going into battles with them, they often, on their coming away, brought them back in a ragged manner, occaſioned by the many cuts they had received on their heads : and therefore the more hacked they were, the more honourable they were accounted ; as our colours in time of war are the more eſteemed for having been ſhot through in many places.

Chapeaux, Wreaths, &c.

Sometimes ſkins of beaſts, as lions, bears, &c. were thus borne to make the bearer look more terrible ; and that gave occaſion to the doubling of mantlings with furs.

Sect. VI. *Of Chapeaux.*

A Chapeau is an ancient hat, or rather cap, of dignity worn by dukes, generally ſcarlet-coloured velvet on the outſide, lined and turned up with fur ; of late frequently to be met with above an helmet, inſtead of a wreath, under gentlemens and noblemens creſts. Heretofore they were ſeldom to be found, as of right appertaining to private families ; but by the grants of Robert Cooke, Clarencieux, and other ſucceeding heralds, theſe, together with ducal coronets, are now frequently to be met with in families who yet claim not above the degree of gentlemen. See the repreſentation of the chapeau, nº 5. fig. 21.

Sect. VII. *Of Wreaths.*

The Wreath is a kind of roll made of two ſkains of ſilk of different colours twiſted together, which ancient knights wore as a head-dreſs when equipped for tournaments. The colours of the ſilk are always taken from the principal metal and colour contained in the coat-of arms of the bearer. They are ſtill accounted as one of the leſſer ornaments of eſcutcheons, and are placed between the helmet and the creſt ; (ſee fig. 21. nº 6). In the time of Henry I. and long after, no man, who was under the degree of a knight, had his creſt ſet on a wreath ; but this, like other prerogatives, has been enfringed ſo far, that every body now-a-days wears a wreath.

Sect. VIII. *Of Creſts.*

The Creſt is the higheſt part of the ornaments of a coat-of-arms. It is called *creſt*, from the Latin word *criſta*, which ſignifies comb or tuft, ſuch as many birds have upon their heads, as the peacock, pheaſant, &c. in alluſion to the place on which it is fixed.

Creſts were formerly great marks of honour, becauſe they were only worn by heroes of great valour, or by ſuch as were advanced to ſome ſuperior military command, in order that they might be the better diſtinguiſhed in an engagement, and thereby rally their men if diſperſed : but they are at preſent conſidered as a mere ornament. The creſt is frequently a part either of the ſupporters, or of the charge borne in the eſcutcheon. Thus the creſt of the royal atchievement of Great Britain is a "Lion guardant crown'd," as may be ſeen in fig. 21. nº 7. The creſt of France is a double Fleur-de-luce." Out of the many creſts borrowed from ſupporters, are the following, viz. The duke of Montagu's, "A Griffon's head coup'd Or, back'd and wing'd Sable :" the marquis of Rockingham's, "A Griffon's head argent, gorg'd with a ducal coronet ;" the earl of Weſtmoreland's ; "A Bull's head Argent, py'd Sable, armed Or ; and lord

HERALDRY.

Fig. 19.

CHIMERICAL FIGURES.

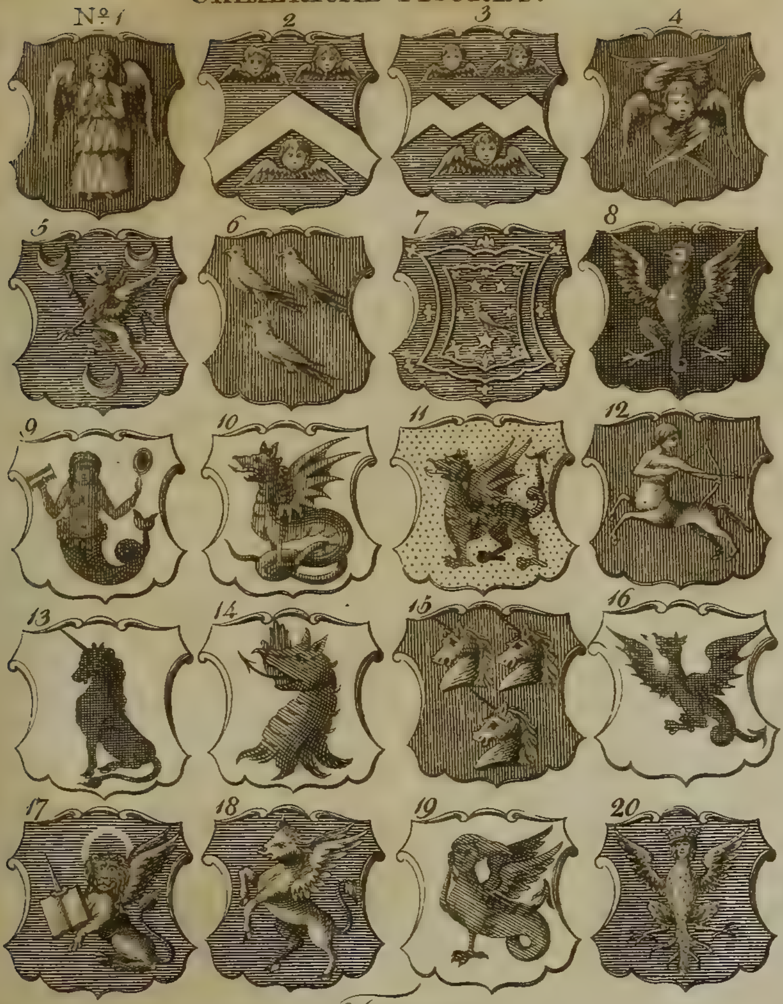


Fig. 20.

CROWNS.

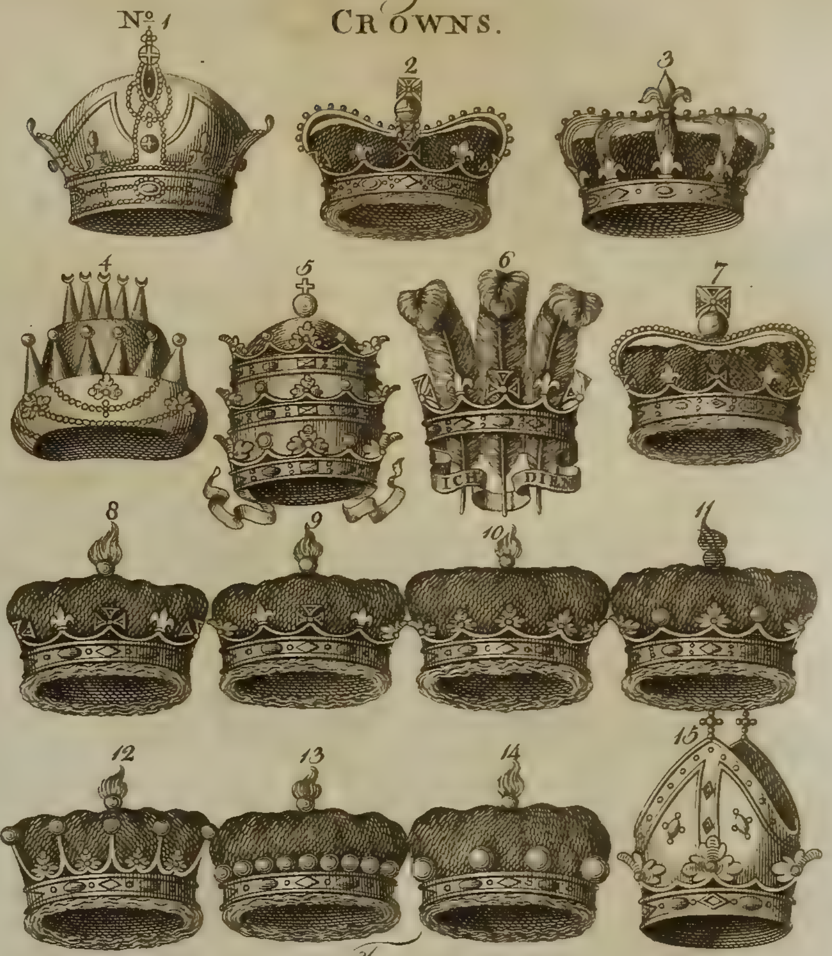


Fig. 21.

ORNAMENTS &c.

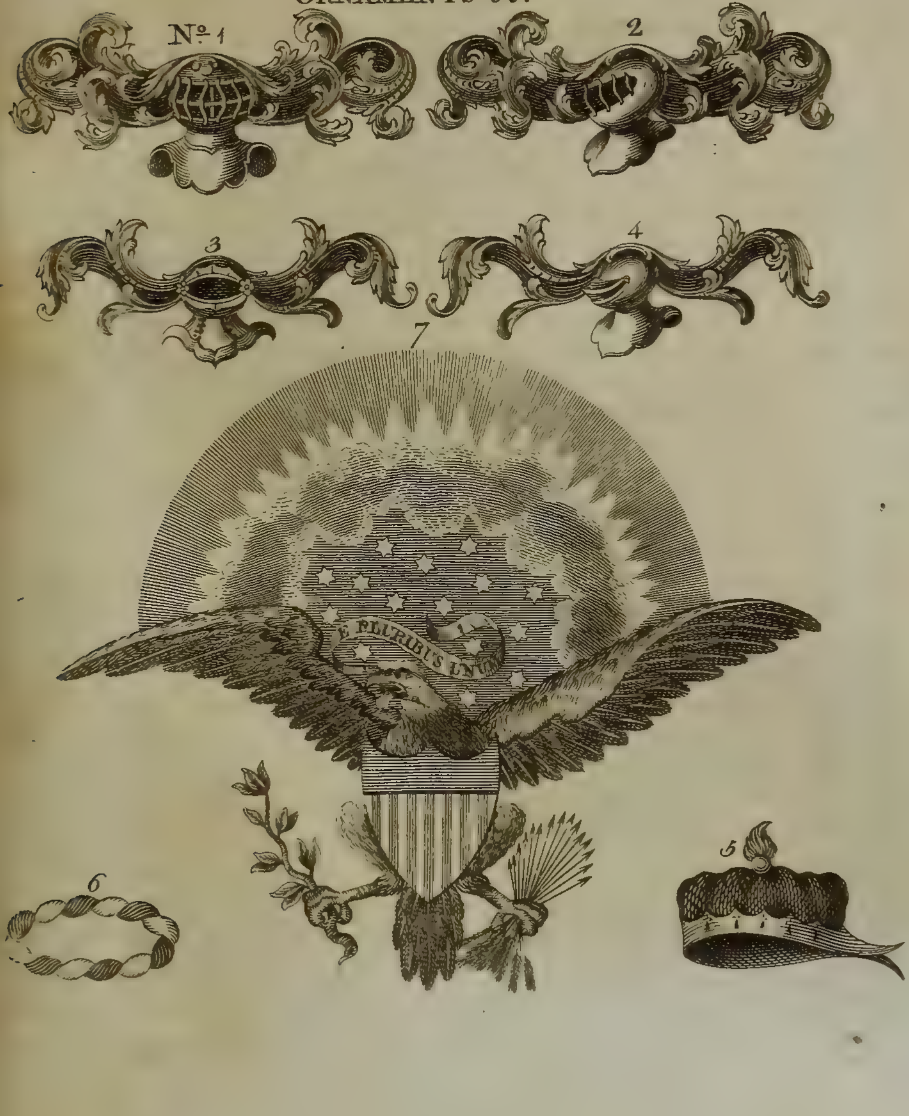
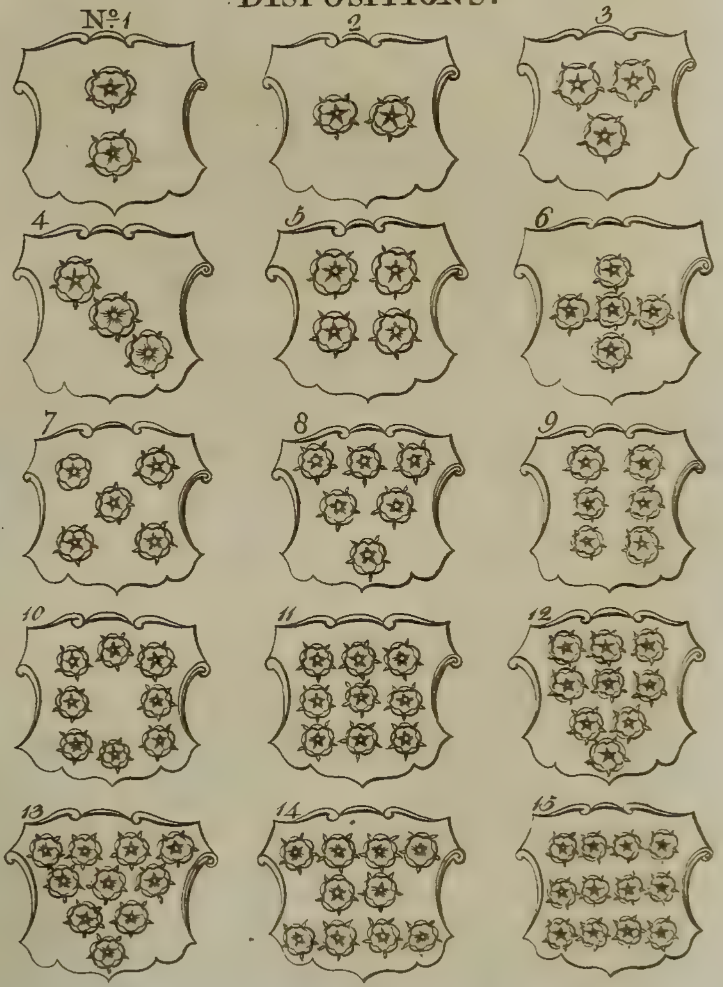


Fig. 22.

DISPOSITIONS.



Thackara & Vallance sc.

Archer's, which is, "Out of a mural crown Or, a Wyvern's head Argent." There are ſeveral inſtances of creſts that are relative to alliances, employments, or names; and which on that account have been changed.

SECT. IX. *Of the Scroll.*

THE Scroll is the ornament placed above the creſt containing a motto, or ſhort ſentence, alluding thereto, or to the bearing's; or the bearer's name, as in the two following inſtances. The motto of the noble earl of Cholmondeley is, *Caſſis tutiſſima virtus*; i. e. "Virtue is the ſafeſt helmet;" on account of the helmet in the coat of arms. The motto of the right hon. lord Forteſcue is, *Forte ſcutum ſalus ducum*; i. e. "A ſtrong ſhield is the ſafety of the commanders;" alluding to the name of that ancient family. Sometimes it has reference to neither, but expreſſes ſomething divine or heroic; as that of the earl of Scarborough, which is, *Murus æreus conſcientia ſana*; i. e. "A good conſcience is a wall of braſs." Others are ænigmatical; as that of the royal achievement, which is *Dieu et mon droit*, i. e. "God and my right;" introduced by Edward III. in 1340, when he aſſumed the arms and title of *king of France*, and began to proſecute his claim, which occaſioned long and bloody wars, fatal, by turns, to both kingdoms: or that of the prince of Wales, which is, *Ich Dien*, "I ſerve," the origin of which has been already mentioned. Mottos, though hereditary in the families that firſt took them up, have been changed on ſome particular occaſions, and others appropriated in their ſtead, inſtances of which are ſometimes met with in the hiſtory of families.

SECT. X. *Of Supporters.*

SUPPORTERS are figures ſtanding on the ſcroll, and placed at the ſide of the eſcutcheon; they are ſo called, becauſe they ſeem to ſupport or hold up the ſhield. The riſe of ſupporters is, by F. Meneſtrier, traced up to ancient tournaments, wherein the knights cauſed their ſhields to be carried by ſervants or pages under the diſguiſe of lions, bears, griffons, blackamoors, &c. who alſo held and guarded the eſcutcheons, which the knights were obliged to expoſe to public view for ſome time before the liſts were opened. Sir George Mackenzie, who diſſents from this opinion, ſays, in his *Treatiſe on the ſcience of heraldry*, chap xxxi. p. 93. "That the firſt origin and uſe of them was from the cuſtom which ever was, and is, of leading ſuch as are inveſted with any great honour to the prince who confers it: thus, when any man is created a duke, marquis, or knight of the garter, or any other order, he is ſupported by, and led to the prince betwixt two of the quality, and ſo receives from him the ſymbols of that honour; and in remembrance of that ſolemnity, his arms are thereafter ſupported by any two creatures he chooſes." Supporters have formerly been taken from ſuch animals or birds as are borne in the ſhields, and ſometimes they have been choſen as bearing ſome alluſion to the names of thoſe whoſe arms they are made to ſupport. The ſupporters of the arms of Great-Britain, ſince king James the firſt's acceſſion to the throne; are *a Lion rampant guardant crowned Or, on the dexter ſide, and an Unicorn Argent, crowned, armed, unguled, maned and gorged with an antique Crown, to which a chain is affixed, all Or*, on the ſiniſter; as it appears by fig. xxi. nº 7.

This laſt figure repreſents the coat of arms of the king of Great-Britain, or the royal atchievement, as it has been marſhalled ſince the acceſſion of king George I. in 1714, and is blazoned as follows, viz.

ARMS. *Quarterly, in the firſt grand quarter Gules three Lions rampant guardant in pale Or*, the imperial enſigns of England; *impaled with Or, a Lion rampant, within a double treſſure flowery and counter-flowery Gules*, the royal arms of Scotland. *The ſecond is Azure, three Fleurs-de-lis Or*, the arms of France. *The third is Azure, a Harp Or, ſtringed Argent*, the enſign of Ireland. *The fourth grand quarter is Gules, two Lions paſſant guardant in pale Or*, for Brunſwick; *impaled with Or ſemee of Hearts proper, a Lion rampant Azure*, for Lunenburgh; *with grafted in baſe Gules, a Horſe current Argent*, for ancient Saxony; *and in a ſhield ſurtout Gules, the Crown of Charlemagne Or*, as arch-treaſurer of the empire; *the whole within a Garter, inſcribed with this motto*, HONI SOIT QUI MALY PENSE, as ſovereign of that noble order, given by the founder king Edward III.

CREST. *On a Helmet full-faced, grated and ſurmounted of a Crown, a Lion guardant crowned Or; the mantlings of the laſt, and lining Ermine.*

SUPPORTERS. *On the Dexter ſide a Lion rampant guarded Or, crowned as the Creſt. On the Siniſter ſide an Unicorn Argent, crowned, armed, maned, and unguled Or, gorged with an antique Crown; a Chain affixed thereto, reflecting over the back, and paſſing over the hind legs of the laſt, both ſtanding on a Scroll inſcribed with this motto*, DIEU ET MON DROIT, *from which iſſue the two Royal Badges of his Majeſty's chief Dominions, viz. on the Dexter-ſide a Roſe party per Pale Argent and Gules, ſtalked and leaved proper* for England; *and on the Siniſter ſide a Thiſtle proper*, for Scotland; being ſo adorned by king James I. upon his ſucceeding to the Crown of England. As king of Scotland, he bore two unicorns, as above, for his ſupporters; but upon the union of that kingdom with England, 1603, he introduced one of the above ſupporters on the ſiniſter-ſide of the royal atchievement, and which continues to this day.

It is to be obſerved, that bearing coats-of-arms ſupported, is, according to the heraldrical rules of England, the prerogative, 1ſt. Of thoſe called *nobiles majores*, viz. dukes, marquiſes, earls, viſcounts, and barons; 2d. Of all knights of the garter, though they ſhould be under the degree of barons; 3d. Of knights of the Bath, who both receive on their creation a grant of ſupporters. And, laſtly, of ſuch knights as the king chooſes to beſtow this honour upon; as in the inſtance of Sir Andrew Fountain, who was knighted by Philip earl of Pembroke, when lord-lieutenant of Ireland, Fountain being then his ſecretary; and on his return to England, king William granted him ſupporters to his arms, viz. *two Griffons Gules and Or*. In Scotland, all the chiefs of clans or names have the privilege of claiming ſupporters; alſo the baronets. But by act of parliament, 10th September, 1672, none are allowed to uſe either arms or ſupporters, under a penalty and confiſcation of all moveables whereon arms are put, without the lord Lyon's authority.

CHAP. V.

Of the Rules or Laws of HERALDRY.

THE ſeveral eſcutcheons, tinctures, charges, and ornaments of coats-of-arms, and their various properties being now explained; it may not be improper to ſubjoin ſuch rules for blazoning the ſame, as the ancient uſage and laws of heraldry have eſtabliſhed amongſt us.

I. The *firſt* and moſt general rule is, to expreſs one's ſelf in proper terms, ſo as not to omit any thing that ought to be ſpecified, and at the ſame time to be clear and conciſe without tautology; as in Ex. xiv. p. 446. and alſo in Ex. ix. p. 453. wherein theſe expreſſions *of the Field*, or *of the Firſt*, prevent the repetition of the forementioned tincture.

II. One muſt begin with the tincture of the field, and then proceed to the principal charges which poſſeſs the moſt honourable place in the ſhield, ſuch as Feſs, Cheveron, &c. always naming that charge firſt which lies next and immediately upon the field; as in Ex. xv. p. 451.

III. After naming the tincture of the field, the honourable ordinaries, or other principal figures, you muſt ſpecify their attributes, and afterwards their metal or colour, as in Ex. xvi. p. 458.

IV. When an honourable ordinary, or ſome one figure, is placed upon another, whether it be a Feſs, Cheveron, Croſs, &c. it is always to be named after the ordinary or figure over which it is placed, with one of theſe expreſſions, *ſurtout*, or *over all*, as in Example xx. p. 449.

V. In the blazoning of ſuch ordinaries as are plain, the bare mention of them is ſufficient; but if an ordinary ſhould be made of any of the crooked lines mentioned above, its form muſt be ſpecified; that is, whether it be Engrailed, Wavy, &c. as in Ex. i. ii. iii. &c. p. 446.

VI. When a principal figure poſſeſſes the centre of the field, its poſition is not to be expreſſed: or (which amounts to the ſame thing) when a bearing is named, without ſpecifying the point where it is placed, then it is underſtood to poſſeſs the middle of the ſhield; as in Ex. xv. p. 459.

VII. The number of the points of mullets or ſtars muſt be ſpecified when more than five; and alſo if a mullet or any other charge be pierced, it muſt be mentioned as ſuch, to diſtinguiſh it from what is plain; as in Ex. xii. and xiv. p. 457.

VIII. When a ray of the ſun, or other ſingle figure, is borne in any other part of the eſcutcheon than the centre, the point it iſſues from muſt be named; as in Ex. iii. p. 457. col. 1.

IX. The natural colour of trees, plants, fruits, birds, &c. is no otherwiſe to be expreſſed in blazoning but by the word *proper*, as in Exam. ii. vii. p. 459: but if diſcoloured, that is, if they differ from their natural colour, it muſt be particularized; as in Ex. i. ii. &c. p. 458.

X. When three figures are in a field, and their poſition is not mentioned in the blazoning, they are always underſtood to be placed two above, and one below; as fig. xxii. n° 3.

XI. When there are many figures of the ſame ſpecies borne in a coat-of-arms, their number muſt be obſerved as they ſtand, and diſtinctly expreſſed; as in Ex. i. p. 460.

But for the better underſtanding of this laſt rule, we have inſerted examples of the *different diſpoſitions of figures*, wherein they are properly repreſented, viz.

Two may be ranged in Pale, in Feſs, &c. See fig. xxiii. n° 1 and 2.

Three, may be 2 and 1, alſo in bend, &c. See n° 3 and 4.

Four, are placed 2 and 2, or cantoned, as in n° 5.

Five, 1, 3, 1, in Croſs; or 2, 1, 2, in Saltier. See n° 6 and 7.

Six, 3, 2, 1, in Pile; or, 2, 2, 2, Paleways. See n° 8 and 9.

Eight, in Orle, or on a Bordure. See n° 10.

Nine, 3, 3, 3, Barways; or 3, 3, 2, 1, in Pile. See n° 11 and 12.

Ten, 4, 3, 2, 1, in Pile; or elſe 4, 2, 4, Barways. See n° 13 and 14.

Twelve, are placed 4, 4, 4, Barways. See n° 15.

There are other poſitions called *irregular*; as for example, when three figures which are naturally placed 2 and 1, are diſpoſed 1 and 2, &c. It muſt alſo be obſerved, that when the field is ſtrewed with the ſame figures, this is expreſſed by the word *ſemée*: but, according to a French armoriſt's opinion, if the figures ſtrewed on the field are whole ones, it muſt be denoted by the words *ſans nombre*; whereas, if part of them is cut off at the extremities of the eſcutcheon, the word *ſemée* or *ſemi* is then to be uſed.

CHAP. VI.

Of MARSHALLING *Coats-of-arms*.

BY *marſhalling* coats-of-arms, is to be underſtood the art of diſpoſing of divers of them in one eſcutcheon, and of diſtributing their contingent ornaments in proper places.

Various cauſes may occaſion arms to be thus conjoined, which J. Guillim compriſes under two heads, viz. *manifeſt* and *obſcure*.

What this learned and judicious herald means by *manifeſt cauſes* in the marſhalling of coats-of-arms, are ſuch as betoken marriages, or a ſovereign's gift, granted either through the ſpecial favour of the prince, or for ſome eminent ſervices. Concerning marriages it is to be obſerved,

I. When the coats-of-arms of a married couple, deſcended of diſtinct families, are to be put together in one eſcutcheon, the field of their reſpective arms is conjoined Paleways, and blazoned *parted per Pale, Baron and Femme, two coats*; *firſt*, &c. In which caſe the baron's arms are always to be placed on the dexter-ſide, and the Femme's arms on the ſiniſter ſide, as in n° 1 and 2, fig. xxiii. *Of arms marſhalled*, which are,

Plate CCXXXIII

1. The coat-of-arms of the rev. Edward Barnard, D. D. chaplain in ordinary to his majeſty, provoſt of Eton-college, canon of Windſor, &c. impaled with that of S. Haggat, his late ſpouſe.

2. The coat-of-arms of the rev. Thomas Dampier, D. D. chaplain in ordinary to his majeſty, prebendary of Durham, canon of Windſor, &c. impaled with that of F. Walker, his ſpouſe.

If a widower marry again, his late and preſent

Marſhalling.

wife's arms are, according to G. Leigh, "to be both placed on the ſiniſter ſide, in the eſcutheon with his own, and parted per Pale. The firſt wife's coat ſhall ſtand on the chief, and the ſecond on the Baſe: or he may ſet them both in Pale with his own, the firſt wife's coat next to himſelf, and his ſecond the outermoſt. If he ſhould marry a third wife, then the two firſt matches ſhould ſtand on the Chief, and the third ſhall have the whole Baſe. And if he takes a fourth wife, ſhe muſt participate one-half of the Baſe with the third wife, and ſo will they ſeem to be ſo many coats quartered." But it muſt be obſerved, that theſe forms of impaling are meant of hereditary coats, whereby the huſband ſtands in expectation of having the hereditary poſſeſſions of his wife united to his patrimony.

II. In the arms of femmes joined to the paternal coat of the baron, the proper differences by which they were borne by the fathers of ſuch women muſt be inſerted.

III. If a coat-of-arms that has a Bordure be impaled with another, as by marriage, then the Bordure muſt be wholly omitted in the ſide of the arms next the centre.

IV. The perſon that marries an heireſs, inſtead of impaling his arms with thoſe of his wife, is to bear them in an eſcutcheon placed in the centre of his ſhield, after the ſame manner as the baronet's badge is marſhalled in no 3, and which, on account of its ſhowing forth his pretenſion to her eſtate, is called *an eſcutcheon of pretence*, and is blazoned *ſurtout, i. e. over-all*, as in the eſcutcheon borne in the fourth quarter of the royal atchievement. But the children are to bear the hereditary coat-of-arms of their father and mother *quarterly*, which denotes a fixed inheritance and ſo tranſmit them to poſterity. The firſt and fourth quarters generally contain the father's arms, and the ſecond and third the mother's; except the heirs ſhould derive not only their eſtate, but alſo their title and dignity, from their mother.

Fig. xxiii.

V. If a maiden or dowager lady of quality marry a commoner, or a nobleman inferior to her rank, their coats-of-arms may be ſet aſide of one another, in two ſeparate eſcutcheons, upon one mantle or drapery, and the lady's arms ornamented according to her title; ſee nº 4 and 5, which repreſent the coat-of-arms of Gen. C. Montague, and lady Elizabeth Villiers viſcounteſs Grandiſon.

VI. Archbiſhops and biſhops impale their arms differently from the fore-mentioned coats, in giving the place of honour, that is, the dexter-ſide, to the arms of their dignity, as it is expreſſed in nº 6, which repreſents the coat-of-arms of Dr Philip Yonge, lord biſhop of Norwich. It may be obſerved of the above prelates, that they thus bear their arms parted per Pale, to denote their being joined to their cathedral church in a ſort of ſpiritual marriage.

With reſpect to ſuch armorial enſigns as the ſovereign thinks fit to augment a coat-of-arms with, they may be marſhalled various ways, as may be ſeen by the arms of his grace the duke of Rutland, inſerted in fig. viii. nº 19, and the example contained in fig. xii. nº 11.

To theſe augmentations may be added, 1ſt, The baronet's mark of diſtinction, or the arms of the province of Ulſter in Ireland, granted and made hereditary in the male line by king James I. who erected this dignity on the 22d of May 1611, in the 9th year of his reign, in order to propagate a plantation in the forementioned province. This mark is *Argent, a ſiniſter Hand, couped at the Wriſt, and erected Gules;* which may be borne either in a canton, or in an eſcutcheon, as will beſt ſuit the figures of the arms. See fig. xxiii. nº 3. which repreſents the coat-of-arms of Sir William Lorrayne, of Kirk-harle, Northumberland, and are thus blazoned: *Quarterly, Sable and Argent, a plain Croſs counter-quartered of the Field.* The Creſt,—*A laurel-tree couped, two branches ſprouting out proper, and fixed to the lower part thereof with a Belt Gules, edged and buckled Or.* This, according to tradition in the family, was granted for ſome worthy action in the field.

2dly, The ancient and reſpectable badge of the moſt noble order of the Garter, inſtituted by king Edward III. 1349, in the 27th year of his reign; and which, ever ſince its inſtitution, has been looked upon as a great honour beſtowed on the nobleſt perſons of England and other countries. This honourable augmentation is made to ſurround, as with a garter, the arms of ſuch knights, and is inſcribed with this motto, *Honi ſoit qui maly penſe:* See nº 7. which repreſents the coat-of-arms of his grace the duke of Montagu, earl of Cardigan, baron Brudenel of Stanton-Wivil, conſtable and lieutenant of Windſor-caſtle, knight of the moſt noble order of the Garter, and baronet, preſident of St Luke's Hoſpital, and F. R. S.

This nobleman, whoſe arms were *Argent, a Cheveron Gules between three Morions proper*, has, ſince the deceaſe of John duke of Montagu, taken the name and arms of Montagu, on account of his being married to lady Mary Montagu, youngeſt daughter and one of the co-heireſſes of his grace.

So far the cauſes for marſhalling divers arms in one ſhield, &c. are *manifeſt*. As to ſuch as are called *obſcure*, that is, when coats-of-arms are marſhalled in ſuch a manner, that no probable reaſon can be given why they are ſo conjoined, they muſt be left to heralds to explain, as being the propereſt perſons to unfold theſe and other myſteries of this ſcience.

CHAP. VII.

Of FUNERAL ESCUTCHEONS.

AFTER having treated of the eſſential parts of the coats-of-arms, of the various charges and ornaments uſually borne therewith, of their attributes and diſpoſitions, and of the rules for blazoning and marſhalling them, we ſhall next deſcribe the ſeveral funeral eſcutcheons, uſually called *hatchments*; whereby may be known, after any perſon's deceaſe, what rank either he or ſhe held when living; and if it be a gentleman's hatchment, whether he was a bachelor, married man, or widower, with the like diſtinctions for gentlewomen.

Plate ccxxxiii. fig. xxiv.

The hatchment, Nº 1. repreſents ſuch as are affixed to the fronts of houſes, when any of the nobility and gentry dies; the arms therein being thoſe of a private gentleman and his wife parted per pale; the dexter ſide, which is Gules, three Bars Or, for

Of Eſcutcheons.

the huſband ; having the ground without the eſcutcheon black, denotes the man to be dead; and the ground on the ſiniſter-ſide being white ſignifies that the wife is living, which is alſo demonſtrated by the ſmall hatchment, n° 2. which is here depicted without mantling, helmet, and creſt, for perſpicuity's ſake only.

When a married gentlewoman dies firſt, the hatchment is diſtinguiſhed by a contrary colour from the former; that is, the arms on the ſiniſter-ſide have the ground without the eſcutcheon black ; whereas thoſe on the dexter ſide, for her ſurviving huſband, are upon a white ground : the hatchment of a gentlewoman is, moreover, differenced by a cherub over the arms inſtead of a creſt. See n° 3.

When a batchelor dies, his arms may be depicted ſingle or quartered, with a creſt over them, but never impaled as the two firſt are, and all the ground without the eſcutcheon is alſo black. See n° 4.

When a maid dies, her arms, which are placed in a lozenge, may be ſingle or quartered, as thoſe of a batchelor ; but inſtead of a creſt, have a cherub over them, and all the ground without the eſcutheon is alſo black. See n° 5.

When a widower dies, his arms are repreſented impaled with thoſe of his deceaſed wife, having a helmet, mantling, and creſt over them, and all the ground without the eſcutcheon black. N° 6.

When a widow dies, her arms are alſo repreſented impaled with thoſe of her deceaſed huſband, but incloſed in a lozenge, and, inſtead of a creſt, a cherub is placed over them ; all the ground without the eſcutcheon is alſo black. See n° 7.

If a widower or batchelor ſhould happen to be the laſt of his family, the hatchment is depicted as in n° 6. and that of a maid or widow, whoſe family is extinct by her death, is depicted as in n° 7. with this difference only, that a death-head is generally annexed to each hatchment, to denote, that death has conquered all.

By the forementioned rules, which are ſometimes neglected through the ignorance of illiterate people, may be known, upon the ſight of any hatchment, what branch of the family is dead ; and by the helmet or coronet, what title and degree the deceaſed perſon was of.

Of Eſcutcheons.

The ſame rules are obſerved with reſpect to the eſcutcheons placed on the hearſe and horſes uſed in pompous funerals, except that they are not ſurmounted with any creſt, as in the foregoing examples of hatchments, but are always plain. It is neceſſary, however, to enſign thoſe of peers with coronets, and that of a maiden lady with a knot of ribbands.

In *Scotland*, a funeral eſcutcheon not only ſhows forth the arms and condition of the defunct, but is alſo a proof of the gentility of his deſcent ; and ſuch perſons for whom this ſpecies of eſcutcheon can be made out, are legally intitled to the character of a gentleman of blood, which is the higheſt ſpecies of gentility. The Engliſh hatchment above deſcribed exhibits no more than a right to a coat-of-arms which may be acquired by purchaſe, and is only the firſt ſtep towards eſtabliſhing gentility in a family.

The funeral eſcutcheon, as exhibited in Scotland, France, and Germany, is in form of a lozenge, above ſix feet ſquare, of black cloth; in the centre of which is painted, in proper colours, the complete atchievment of the defunct, with all its exterior ornaments and additional marks or badges of honour ; and round the ſides are placed the ſixteen arms of the families from which he derives his deſcent, as far back as the grandfather's grandfather, as the proofs of his gentility: they exhibit the armorial bearings of his father and mother, his two grandmothers, his four great-grandmothers, and his eight great-grandmothers mothers; if all theſe families have acquired a legal right to bear arms, then the gentility of the perſon whoſe proof it is muſt be accounted complete, but not otherwiſe. On the four corners are placed mort-heads, and the initials of his name and titles or deſignation ; and the black interſtices are ſemee or powdered with tears, as in the figure, n° 8. which is the eſcutcheon of the right hon. James 5th earl of Balcarras, chief of the ancient ſurname of *Lindeſay*.

On the morning of the interment, one of theſe is placed on the front of the houſe where the deceaſed lies ; and another on the church in which he is to be buried, which after the burial is fixed above the grave. The pall, too, is generally adorned with theſe proofs of gentility, and the horſes of the hearſe with the defunct's arms.

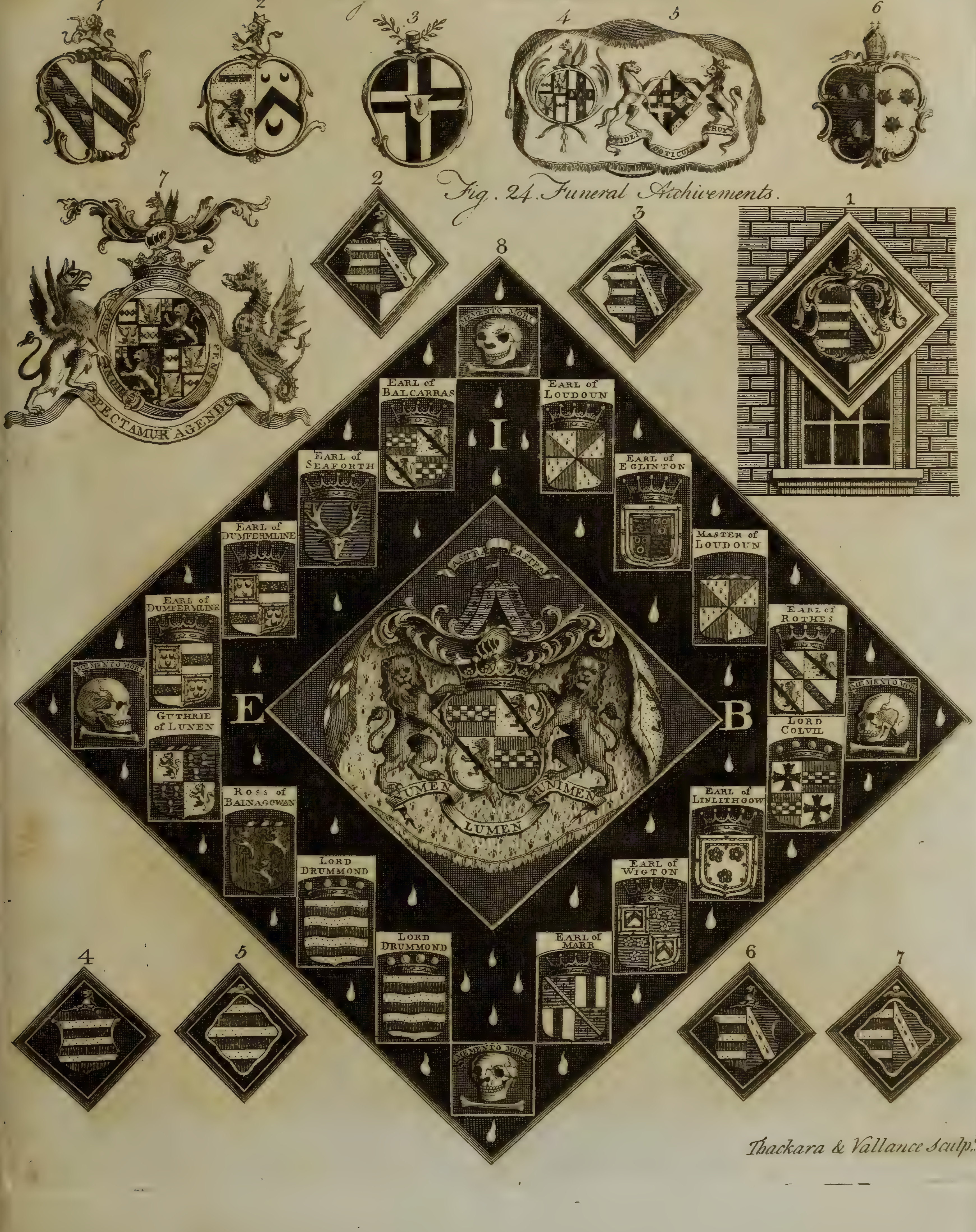
Heraldus.

HERALDUS (Deſiderius), in French *Herault*, a counſellor of the parliament of Paris who has given good proofs of uncommon learning by very different works. His *Adverſaria* appeared in 1599 ; which little book, if the *Scaligerana* may be credited, he repented the having publiſhed. His notes on Tertullian's Apology, on Minutius Fœlix, and on Arnobius, have been eſteemed. He alſo wrote notes on Martial's Epigrams. He diſguiſed himſelf under the name of *David Leidhreſſerus*, to write a political diſſertation on the independence of kings, ſome time after the death of Henry IV. He had a controverſy with Salmaſius, *De jure Attico ac Romano* ; but did not live to finiſh what he had written on that ſubject. What he had done, however, was printed in 1650. He died in June 1649. Guy Patin ſays, "that he was looked upon as a very learned man, both in the civil law and in polite literature, and wrote with great facility on any ſubject he pitched on." Daille, ſpeaking of ſuch Proteſtant writers as condemned the executing of Charles I. king of England, quotes the *Pacifique Royal en deuil*, by Herault. This author, ſon to our Deſiderius Heraldus, was a miniſter in Normandy, when he was called to the ſervice of the Walloon church of London under Cha. I. and he was ſo zealous a royaliſt, that he was forced to fly to France, to eſcape the fury of the commonwealths men. He returned to England after the reſtoration, and reſumed his ancient employment in the Walloon-church.

HERALDRY.

Fig. 23. Arms Marshalled.

Fig. 24. Funeral Achievements.



Thackara & Vallance Sculp.^t

church at London ; ſome time after which he obtained a canonry in the cathedral of Canterbury, and enjoyed it till his death.

HERB, in botany ; a name by which Linnæus denominates that portion of every vegetable which ariſes from the root, and is terminated by the fructification. It comprehends, 1. The trunk, ſtalk, or ſtem. 2. The leaves. 3. Thoſe minute external parts called by the ſame author the *fulcra* or ſupports of plants 4. The buds, or, as he alſo terms them, the *winter-quarters* of the future vegetable.

Herb-Chriſtopher. See Actæa.

Herb-Robert, (a ſpecies of Geranium); a plant in great reputation with ſome farmers on account of its prevailing virtues againſt ſtaling the blood and the bloody-flux in cattle, in which caſes it is ſaid to be the beſt among a great variety of means commonly uſed on theſe occaſions.

HERBACEOUS plants, are thoſe which have ſucculent ſtems or ſtalks that lie down to the ground every year. Of herbaceous plants, thoſe are annual which periſh ſtem and root and all every year ; biennial, which ſubſiſt by the roots two years ; perennial which are perpetuated by their roots for a ſeries of years, a new ſtem being produced every ſpring.

HERBAGE, in law, ſignifies the paſture provided by nature for the food of cattle; alſo the liberty to feed cattle in the foreſt, or in another perſon's ground.

HERBAL, ſignifies a book that treats of the claſſes, genera, ſpecies, and virtues of plants.

Herbal is ſometimes alſo uſed for what is more uſually called *hortus ſiccus*. See Hortus.

HERBELOT (Bartholomew d'), a French writer, eminent for his original learning, was born at Paris in 1625. He travelled ſeveral times into Italy, where he obtained the eſteem of ſome of the moſt learned men of the age. Ferdinand II. grand duke of Tuſcany, gave him many marks of his favour : a library being expoſed to ſale at Florence, the duke deſired him to examine the manuſcripts in the original languages, to ſelect the beſt of them, and to mark the price ; which being done, the generous prince purchaſed them, and made him a preſent of them. M. Colbert being at length informed of Herbelot's merit, recalled him to Paris, and obtained a penſion for him of 1500 livres: he afterwards became ſecretary and interpreter of the oriental languages, and royal profeſſor of the Syriac tongue. He died at Paris in 1695. His principal works are intitled *Bibliotheque Orientale*, which he firſt wrote in Arabic, and afterwards tranſlated into French. It is greatly eſteemed. M. Herbelot's modeſty was equal to his erudition ; and his uncommon abilities were accompanied with the utmoſt probity, piety, and charity, which he practiſed thro' the whole courſe of his life.

HERBERT (Mary), counteſs of Pembroke, was ſiſter to the famous Philip Sidney, and wife of Henry earl of Pembroke. She was not only a lover of the muſes, but a great encourager of polite literature ; a character not very common among ladies. Her brother dedicated his incomparable romance *Arcadia* to her, from which circumſtance it hath been called *The Counteſs of Pembroke's Arcadia.* She tranſlated a dramatic piece from the French, intitled *Antonius,* a tragedy ; though it is ſaid ſhe was aſſiſted by her lord's chaplain, Dr Babington, afterwards biſhop of Exeter. She turned the pſalms of David into Engliſh metre ; but it is doubtful whether theſe works were ever printed. She died in 1621 ; and an exalted character of her is to be found in Francis Oſborne's memoirs of king James I.

Herbert (Edward), lord Herbert of Cherbury in Shropſhire, an eminent Engliſh writer, was born in 1581, and educated at Oxford ; after which he travelled, and at his return was made knight of the Bath. James I. ſent him ambaſſador to Louis XIII. in behalf of the Proteſtants who were beſieged in ſeveral cities of France ; and continued in this ſtation till he was recalled, on account of a diſpute between him and the conſtable de Luines. In 1625 he was advanced to the dignity of a baron in the kingdom of Ireland, by the title of lord Herbert of Caſtle Iſland ; and in 1631 to that of lord Herbert of Cherbury in Shropſhire. After the breaking out of the civil wars, he adhered to the parliament ; and in 1644 obtained a penſion, on account of his having been plundered by the king's forces. He wrote a Hiſtory of the Life and Reign of Henry VIII. which was greatly admired : a treatiſe *De veritate* ; and ſeveral other works. He died at London in 1648.

“ Lord Herbert (ſays Mr Granger) ſtands in the firſt rank of the public miniſters, hiſtorians, and philoſophers of his age. It is hard to ſay whether his perſon, his underſtanding, or his courage, was the moſt extraordinary ; as the fair, the learned, and the brave, held him in equal admiration. But the ſame man was wiſe and capricious ; redreſſed wrongs and quarrelled for punctilios ; hated bigotry in religion, and was himſelf a bigot to philoſophy. He expoſed himſelf to ſuch dangers as other men of courage would have carefully declined : and called in queſtion the fundamentals of a religion which none had the hardineſs to diſpute beſides himſelf.”

Herbert (George), an Engliſh poet and divine, was brother of the preceding. He was born in 1593, and was educated at Cambridge. In 1619 he was choſen public orator of that univerſity, and afterwards obtained a ſinecure from the king. In 1626 he was collated to the prebend of Layton Eccleſia, in the dioceſe of Lincoln ; and in 1630 was inducted into the rectory of Bamerton, near Sarum. The great lord Bacon had ſuch an opinion of his judgment, that he would not ſuffer his works to be printed before they had paſſed his examination. He wrote a volume of devout poems, called *The Temple,* and another entitled *The Prieſt of the Temple.* This pious divine died about the year 1635.

Herbert (William), earl of Pembroke, was born at Wilton in Wiltſhire, 1580 ; admitted of New-college in Oxford in 1592, where he continued about two years. In 1691, he ſucceeded to his father's honours and eſtate ; was made K. G. in 1604 ; and governor of Portſmouth ſix years after. In 1626, he was elected chancellor of the univerſity of Oxford ; and about the ſame time made lord ſteward of the king's houſhold. He died ſuddenly at his houſe called *Baynard's caſtle,* in London, April 10, 1630 ; according to the calculation of his nativity, ſays Wood, made ſeveral years before by Mr Thomas Allen of Glouceſter-hall. Clarendon relates concerning this calculation, that ſome conſiderable perſons connected with lord Pembroke being met at Maidenhead, one of them at ſupper drank a health to the lord ſteward : upon which another ſaid, that he believed his lordſhip was at that time very merry; but he had now outlived the day, which it had been prognoſticated upon his nativity he would not outlive; for he had outlived it now, for that was his birth-day, which had completed his age to 50 years. The next morning, however, they received the news of his death. Whether the noble hiſtorian really believed this and other accounts relating to aſtrology, apparitions, providential interpoſitions, &c. which he has inſerted in his hiſtory, we do not preſume to ſay: he delivers them, however, as if he did not actually diſbelieve them. Lord Pembroke was not only a great favourer of learned and ingenious men, but was himſelf learned, and endued with a conſiderable ſhare of poetic genius. All that are extant of his productions in this way were publiſhed with this title: “Poems written by William Earl of Pembroke, &c. many of which are anſwered by way of repartee by Sir Benjamin Rudyard, with other Poems written by them occaſionally and apart, 1660, 8vo.

HERBERT (Sir Thomas), an eminent gentleman of the Pembroke family, was born at York, where his father was an alderman. William earl of Pembroke ſent him to travel at his expence in 1626, and he ſpent four years in viſiting Aſia and Africa: his expectations of preferment ending with the death of the earl, he went abroad again, and travelled over ſeveral parts of Europe. In 1634, he publiſhed, in folio, a Relation of ſome years Travel into Africa and the Great Aſia, eſpecially the Territories of the Perſian Monarchy, and ſome parts of the Oriental Indies and Iſles adjacent. On the breaking out of the civil war he adhered to the parliament; and at Oldenby, on the removal of the king's ſervants, by deſire of the commiſſioners from the parliament, he and James Harrington were retained as grooms of his bed-chamber, and attended him even to the block. At the reſtoration he was created a baronet by Charles II. for his faithful ſervices to his father during his two laſt years. In 1678 he wrote *Threnodia Carolina*, containing an account of the two laſt years of the life of Charles I. and he aſſiſted Sir William Dugdale in compiling the third volume of his *Monaſticon Anglicanum*. He died at York in 1682, leaving ſeveral MSS to the public library at Oxford, and others to that of the cathedral at York.

HERBIVOROUS ANIMALS, thoſe which feed only on vegetables.

HERCULANEUM is the name of an ancient city of Campania in Italy, which was deſtroyed by an eruption of Veſuvius in the firſt year of the emperor Titus, or the 79th of the Chriſtian era, and lately rendered famous on account of the curious monuments of antiquity diſcovered in its ruins; an account of which has been publiſhed by order of the king of Naples, in a work of ſix volumes folio.—The epocha of the foundation of Herculaneum is unknown. Dionyſius Halicarnaſſenſis conjectures that it may be referred to 60 years before the war of Troy, or about 1342 years before Chriſt; and therefore that it laſted about 1400 years.

The thickneſs of the heap of lava and aſhes by which the city was overwhelmed, has been much increaſed by fiery ſtreams vomited ſince that cataſtrophe; and now forms a maſs 24 feet deep of dark grey ſtone, which is eaſily broken to pieces. By its non-adheſion to foreign bodies, marbles and bronzes are preſerved in it as in a caſe made to fit them, and exact moulds of the faces and limbs of ſtatues are frequently found in this ſubſtance. The preciſe ſituation of this ſubterraneous city was not known till the year 1713, when it was accidentally diſcovered by ſome labourers who, in digging a well, ſtruck upon a ſtatue on the benches of the theatre. Many others were afterwards dug out and ſent to France by the prince of Elbœuf. But little progreſs was made in the excavations till Charles infant of Spain aſcended the Neapolitan throne; by whoſe unwearied efforts and liberality a very conſiderable part of Herculaneum has been explored, and ſuch treaſures of antiquity drawn out as form the moſt curious muſeum in the world. It being too arduous a taſk to attempt removing the covering, the king contented himſelf with cutting galleries to the principal buildings, and cauſing the extent of one or two of them to be cleared. Of theſe the theatre is the moſt conſiderable. On a balluſtrade which divided the orcheſtra from the ſtage was found a row of ſtatues; and, on each ſide of the pulpitum, the equeſtrian figure of a perſon of the Nonia family. They are now placed under porticoes of the palace; and from the great rarity of equeſtrian ſtatues in marble would be very valuable objects, were their workmanſhip even leſs excellent than it is: one of them in particular is a very fine piece of ſculpture. Since the king of Spain left Naples, the digging has been continued, but with leſs ſpirit and expenditure: indeed the collection of curioſities brought out of Herculaneum and Pompeii is already ſo conſiderable, that a relaxation of zeal and activity becomes excuſable. They are now arranged in a wing of the palace; and conſiſt not only of ſtatues, buſts, altars, inſcriptions, and other ornamental appendages of opulence and luxury; but alſo comprehend an entire aſſortment of the domeſtic, muſical, and chirurgical inſtruments uſed by the ancients; tripods of elegant form and exquiſite execution, lamps in endleſs variety, vaſes and baſons of noble dimenſions, chandeliers of the moſt beautiful ſhapes, pateras, and other appurtenances of ſacrifice, looking-glaſſes of poliſhed metal, coloured glaſs ſo hard, clear, and well ſtained, as to appear like emeralds, ſapphires, and other precious ſtones; a kitchen completely fitted up with copper-pans lined with ſilver, kettles, ciſterns for heating water, and every utenſil neceſſary for culinary purpoſes; ſpecimens of various ſorts of combuſtibles, retaining their form though burnt to a cinder; corn, bread, fiſh, oil, wine, and flower: a lady's toilet, fully furniſhed with combs, thimbles, rings, paint, ear-rings, &c. Among the ſtatues, which are numerous, connoiſſeurs allow the greateſt ſhare of merit to a Mercury and a ſleeping faun: the buſts fill ſeveral rooms; but very few of the originals whom they were meant to imitate are known. The floors are paved with ancient Moſaic. Few rare medals have been found in theſe ruins; the moſt curious is a gold medallion of Auguſtus ſtruck in Sicily in the 15th year of his reign. The freſco paintings, which for the ſake of preſervation have been torn off the walls and framed and glazed, are to be ſeen in another part of the palace.

“ The elegance of the attitudes, and the infinite variety of the ſubjects (Mr Swinburne obſerves), ſtamp them as performances worthy of the attention of artiſts and antiquarians; but no pictures yet found are maſterly enough to prove that the Greeks carried the art of painting to as great a height of perfection as they did that of ſtatuary. Yet can we ſuppoſe thoſe authors incapable of appreciating the merits of an Apelles or Zeuxis, who with ſo much critical diſcernment have pointed out the beauties of the works of a Phidias or a Praxiteles, beauties that we have ſtill an opportunity of contemplating? would they have beſtowed equal praiſes upon both kinds of performances if either of them had been much inferior to the other? I think it is not probable; and we muſt preſume that the capital productions of the ancient painters, being of more periſhable materials than buſts and ſtatues, have been deſtroyed in the fatal diſaſters that have ſo often afflicted both Greece and Italy. Herculaneum and Pompeii were but towns of the ſecond order, and not likely to poſſeſs the maſter-pieces of the great artiſts, which were uſually deſtined to adorn the more celebrated temples, or the palaces of kings and emperors.” A more valuable acquiſition than bronzes and pictures was thought to be made, when a large parcel of manuſcripts was found among the ruins. Hopes were entertained that many works of the claſſics, which time has deprived us of, were now going to be reſtored to light, and that a new mine of ſcience was on the point of being opened. But the difficulty of unrolling the burnt parchment, of paſting the fragments on a flat ſurface, and of decyphering the obſcure letters, have proved ſuch obſtacles, that very little progreſs has been made in the work. A prieſt invented the method of proceeding; but it would require the joint labours of many learned men to carry on ſo nice and tedious an operation with any ſuccceſs. The plan is dropped; and the manuſcripts now lie in duſty heaps, as uſeleſs to the learned world as they had been for the preceding ſeventeen centuries.

HERCULES, in fabulous hiſtory, a moſt renowned Grecian Hero, who after death was ranked among the gods, and received divine honours. According to the ancients, there were many perſons of the ſame name. Diodorus mentions three, Cicero ſix, and ſome authors exend the number to no leſs than forty-three. Of all theſe, one generally called the *Theban Hercules*, is the moſt celebrated; and to him, as may eaſily be imagined, the actions of the others have been attributed. He is reported to have been the ſon of Jupiter by Alcmena (wife to Amphitryon king of Argos), whom Jupiter enjoyed in the ſhape of her huſband while he was abſent; and in order to add the greater ſtrength to the child, made that amorous night as long as three. Amphitryon having ſoon after accidentally killed his uncle and father-in-law Electryon, was obliged to fly to Thebes, where Hercules was born. The jealouſy of Juno, on account of her huſband's amour with Alcmena, prompted her to deſtroy the infant. For this purpoſe ſhe ſent two ſerpents to kill him in the cradle, but young Hercules ſtrangled them both. He was early inſtructed in the liberal arts, and Caſtor the ſon of Tyndarus taught him how to fight, Eurytus how to ſhoot with a bow and arrrows, Autolicus to drive a chariot, Linus to play on the lyre, and Eumolpus to ſing. He, like the reſt of his illuſtrious contemporaries, ſoon after became the pupil of the centaur Chiron, and under him he perfected and rendered himſelf the moſt valiant and accompliſhed of the age. In the 18th year of his age he reſolved to deliver the neighbourhood of mount Cithæron from a huge lion which preyed on the flocks of Amphytryon his ſuppoſed father, and which laid waſte the adjacent country. He went to the court of Theſpius king of Theſpis, who ſhared in the general calamity; and he received here a tender treatment, and was entertained during 50 days. The 50 daughters of the king became mothers by Hercules during his ſtay at Theſpis, and ſome ſay that it was effected in one night. After he had deſtroyed the lion of mount Cithæron, he delivered his country from the annual tribute of 100 oxen which it paid to Erginus. Such public ſervices became univerſally known; and Creon, who then ſat on the throne of Thebes, rewarded the patriotic deeds of Hercules by giving him his daughter in marriage, and entruſting him with the government of his kingdom.

Euryſtheus, the ſon of Amphitryon, having ſucceeded his father, ſoon became jealous of Hercules; and fearing leſt he might by him be deprived of his crown, left no means untried to get rid of him. Of this Hercules was not inſenſible, becauſe he was perpetually engaging him on ſome deſperate expedition; and therefore went to conſult the oracle. But being anſwered that it was the pleaſure of the gods that he ſhould ſerve Euriſtheus 12 years, he fell into a deep melancholy, which at laſt ended in a furious madneſs; during which, among other deſperate actions, he put away his wife Megara, and murdered all the children he had by her. As an expiation of this crime, the king impoſed upon him twelve labours ſurpaſſing the power of all other mortals to accompliſh, which nevertheleſs our hero performed with great eaſe. The favours of the gods had indeed completely armed him when he undertook his labours. He had received a coat of armour and helmet from Minerva, a ſword from Mercury, a horſe from Neptune, a ſhield from Jupiter, a bow and arrows from Apollo, and from Vulcan a golden cuiraſs and brazen buſkin, with a celebrated club of braſs according to the opinion of ſome writers.

The firſt labour impoſed upon him was the killing of a lion in Nemea, a wood of Achaia; whoſe hide was proof againſt any weapon, ſo that he was forced to ſeize him by the throat and ſtrangle him. He carried the dead beaſt on his ſhoulders to Mycenæ, and ever after clothed himſelf with the ſkin. Euryſtheus was ſo aſtoniſhed at the ſight of the beaſt, and at the courage of Hercules, that he ordered him never to enter the gates of the city when he returned from his expeditions, but to wait for his orders without the walls. He even made himſelf a brazen veſſel into which he retired whenever Hercules returned—The ſecond labour was to deſtroy the Lernæan hydra, which had ſeven heads according to Apollodorus, 50 according to Simonides, and 100 according to Diodorus. This celebrated monſter he firſt attacked with his arrows; but ſoon after he came to a cloſe engagment, and by means of his heavy club he deſtroyod the heads of his enemy. This, however, was productive of no advantage; for as ſoon as one head was beaten to pieces by the club, immediately two ſprang up; and the labour of Hercules would have remained unfiniſhed, had not he commanded his friend Iolas to burn with a hot iron the root of the head which he had cruſhed to pieces. This ſucceeded; and Hercules became victorious, opened the belly of the monſter, and dipped his arrows in the gall to render the wounds which he gave fatal and incurable.—He was ordered in his third labour to bring alive and unhurt into the preſence of Euryſtheus a ſtag, famous for its incredible ſwiftneſs, its golden horns and brazen feet. This celebrated animal frequented the neighbourhood of Œnoe; and Hercules was employed for a whole year in continually purſuing it; at laſt he caught it in a trap, or when tired, or, according to others, by ſlightly wounding it and leſſening its ſwiftneſs.—The fourth labour was to bring alive to Euryſtheus a wild boar which ravaged the neighbourhood of Erymanthus. In this expedition he deſtroyed the centaurs, and caught the boar by cloſely purſuing him through the deep ſnow. Euryſtheus was ſo frightened at the ſight of the boar, that according to Diadorus, he hid himſelf in his brazen veſſel for ſome days.—In his fifth labour Hercules was ordered to clean the ſtables of Augeas, where 3000 oxen had been confined for many years.—For his ſixth labour he was ordered to kill the carnivorous birds which ravaged the country near the lake Stymphalis in Arcadia.—In his ſeventh labour he brought alive into Peloponneſus a prodigious wild bull which laid waſte the iſland of Crete.—In his eight labour he was employed in obtaining the mares of Diomedes, which fed upon human fleſh. He killed Diomedes, and gave him to be eat by his mares, which he brought to Euryſtheus. They were ſent to mount Olympus by the king of Mycenæ, where they were devoured by the wild beaſts; or, according to others, they were conſecrated to Jupiter, and their breed ſtill exiſted in the age of Alexander the Great.—For his ninth labour, he was commanded to obtain the girdle of the queen of the Amazons—In his tenth labour he killed the monſter Geryon king of Gades, and brought to Argos his numerous flocks which fed upon human fleſh. This was in Iberia or Spain; in the furtheſt parts of which he erected his two pillars, as the utmoſt limits of the then known world. Theſe ten labours he atchieved, as the fable ſays, in about eight years. In this laſt expedition he is likewiſe affirmed to have killed Antæus, a famous giant of a monſtrous ſize, who, when weary with wreſtling or labour, was immediately refreſhed by touching the earth. Hercules overcame him in wreſtling, and ſlew him; and after him the tyrant Buſiris, in his way through Egypt. This bloody man uſed to ſacrifice all his gueſts and ſtrangers upon his altars; and deſigning to have done the ſame by Hercules, was ſlain by him, together with all his attendants.—His eleventh labour was the carrying away the Heſperian golden apples kept by a dragon: (See HESPERIDES).—The twelfth and laſt, and moſt dangerous of his labours, was to bring upon the earth the three-headed dog Cerberus. Deſcending into Hell by a cave on mount Tænarus, he was permitted by Pluto to carry away his friends Theſeus and Pirithous, who were condemned to puniſhment in hell, and Cerberus alſo was granted to his prayers, provided he made uſe of no arms but only force to drag him away. Hercules, as ſome report, carried him back to hell after he had brought him before Euryſtheus.

Many other exploits are ſaid to have been performed by Hercules; in particular, he accompanied the Argoanuts to Colchis before he delivered himſelf up to the king of Mycenæ. He aſſiſted the gods in their wars againſt the giants, and it was through him alone that Jupiter obtained a victory. He conquered Laomedon, and pillaged Troy. When Iole, the daughter of Eurytus king of Œchalia, of whom he was deeply enamoured, was refuſed to his intreaties, he became the prey of a ſecond fit of inſanity, and he murdered Iphitus, the only one of the ſons of Eurytus who favoured his addreſſes to Iole. He was ſome time after purified of the murder, and his inſanity ceaſed; but the gods perſecuted him, and he was viſited by a diſorder which obliged him to apply to the oracle of Delphi for relief. The coldneſs with which the Pythia received him irritated him, and he reſolved to plunder Apollo's temple and carry away the ſacred tripod. Apollo oppoſed him, and a ſevere conflict was begun, which nothing but the interference of Jupiter with his thunderbolts could have prevented. He was upon this told by the oracle that he muſt be ſold as a ſlave, and remain three years in the moſt abject ſervitude to recover from his diſorder. He complied; and Mercury, by order of Jupiter, conducted him to Omphale, queen of Lydia, to whom he was ſold as a ſlave. Here he cleared all the country from robbers; and Omphale, who was aſtoniſhed at the greatneſs of his exploits, married him. Hercules had Agelaus and Lamon by Omphale, from whom Crœſus king of Lydia was deſcended. He became alſo enamoured of one of Omphale's female ſervants, by whom he had Alceus. After he had completed the years of his ſlavery, he returned to Peloponneſus, where he re-eſtabliſhed on the throne of Sparta Tyndarus, who had been expelled by Hippocoon. He became one of Dejanira's ſuitors, and married her after he had overcome all his rivals. He was obliged to leave Calydon his father-in-law's kingdom, becauſe he had inadvertently killed a man with a blow of his fiſt; and it was on account of this expulſion that he was not preſent at the hunting of the Calydonian boar. From Calydon he retired to the court of Ceyx king of Trachinia. The king received him and his wife with great marks of friendſhip, and purified him of the murder which he had committed at Calydon. Hercules was ſtill mindful that he had once been refuſed the hand of Iole; he therefore made war aganſt her father Eurytus, and killed him with three of his ſons. Iole fell into the hands of her father's murderer, and found that ſhe was loved by Hercules as much as before. She accompanied him on mount Œta, where he was going to raiſe an altar and offer a ſolemn ſacrifice to Jupiter. As he had not then the ſhirt and tunic in which he arrayed himſelf to offer a ſacrifice, he ſent Lichas to Trachin to his wife Dejanira, in order to provide himſelf a proper dreſs. Dejanira had ſome time before been attempted by the Centaur Neſſus, as he was ferrying her over the river Euenus; and Hercules beholding it from the ſhore, had given him a mortal wound with an arrow. The monſter finding himſelf dying, adviſed her to mix ſome oil with the blood which flowed from his wound, and to anoint her huſband's ſhirt with it, pretending that it would infallibly ſecure him from loving any other woman; and ſhe too well appriſed of his inconſtancy, had actually prepared the poiſoned ointment accordingly.—Lychas coming to her for the garments, unfortunately acquainted her with his having brought away Iole; upon which ſhe in a fit of jealouſy, anointed his ſhirt with the fatal mixture. This had no ſooner touched his body, than he felt the poiſon diffuſe itſelf through all his veins; the violent pains of which cauſed him to diſband his army, and to return to Trachin. His torment ſtill increaſing, he ſent to conſult the oracle for a cure, and was anſwered, that he ſhould cauſe himſelf to be conveyed to mount Oeta, and there rear up a great pile of wood, and leave the reſt to Jupiter. By the time he had obeyed the oracle, his pains being become intolerable, he dreſſed himſelf in his martial habit, flung himſelf upon the pile, and deſired the byſtanders to ſet fire to it. Others ſay that he left the charge of it to his ſon Philoctetes; who having performed his father's command, had his bow and arrows given him as a reward for his obedience. At the ſame time Jupiter, to be as good as his word, ſent a flaſh of lightning, which conſumed both the pile and the hero; inſomuch that Iolans, coming to take up his bones, found nothing but aſhes: from which they concluded, that he was paſſed from earth to heaven, and joined to the gods. His friends ſhowed their gratitude to his memory by raiſing an altar where the burning pile had ſtood. Menœtius the ſon of Actor offered him a ſacrifice of a bull, a wild boar, and a goat, and enjoined the people of Opus yearly to obſerve the ſame religious ceremonies. His worſhip ſoon became as univerſal as his fame; and Juno, who had once perſecuted him with ſuch fury, forgot her reſentment, and gave him her daughter Hebe in marriage. Hercules has received many ſirnames and epithets, either from the place where his worſhip was eſtabliſhed, or from the labours which he atchieved. His temples were numerous and magnificent, and his divinity revered. No dogs or flies ever entered his temple at Rome; and that of Gades, according to Strabo, was always forbidden to women and pigs. The Phœnicians offered quails on his altars; and as it was ſuppoſed that he preſided over dreams, the ſick and infirm were ſent to ſleep in his temples, that they might receive in their dreams the agreeable preſages of their approaching recovery. The white poplar was particulary dedicated to his ſervice.

It is obſerved that there are none even of the twelve great gods of antiquity that have ſo many ancient monuments relating to them as Hercules. The famous ſtatue of Hercules in the Farneſe palace at Rome, is well known to the connoiſſeurs: this repreſents him reſting after the laſt of his twelve labours above recited, leaning on his club, and holding the apples of the Heſperides in his hand. In this ſtatue, as in all the other figures of him, he is formed, by the breadth of his ſhoulders, the ſpaciouſneſs of his cheſt, the largeneſs of his ſize, and the firmneſs of his muſcles, to expreſs ſtrength and a capacity of enduring great fatigue, which conſtituted the chief idea of virtue among the ancient heathens. His other attributes are his lion's ſkin, his club, and his bow.—Hercules is repreſented by the ancients as an exemplar of virtue: however, the *Hercules bibax*, or drunken Hercules, is no uncommon figure; and his amours are deſcribed both by the poets and artiſts. Thus, the Cupids are made to take away his club, and he is exhibited in the poſture of bending under a little boy; by which actions we perceive that he who conquered all difficulties was a ſlave to love. His children are as numerous as the labours and difficulties which he underwent; and indeed they became ſo powerful ſoon after his death, that they alone had the courage to invade all Peloponneſus. See Heraclidæ.

The apotheoſis of Hercules, or the eſtabliſhment of his altars in the principal cities of Greece, is fixed by Thraſybulus 29 years before the taking of Troy.

Hercules has been particularly honoured by the Greeks under the name of *Muſagetes*, "the conductor of the Muſes;" and at Rome under that of *Hercules Muſarum*. He is repreſented on medals with a lyre in his hand; and the reverſe is marked with the figure of the nine muſes, with their proper ſymbols.

Hercules, in aſtronomy, one of the conſtellations of the northern hemiſphere.—The ſtars in the conſtellation Hercules in Ptolemy's catalogue are 29; in Tycho's 28; in the Britannic catalogue, 113.

Hercules's Pillars, in antiquity, a name given to two lofty mountains, ſituated one on the moſt ſouthern extremity of Spain, and the other on the oppoſite part of Africa. They were called by the ancients *Abyla* and *Calpe*. They are reckoned the boundaries of the labours of Hercules; and according to ancient tradition, they were joined together till they were ſevered by the arm of the hero, and a communication opened between the Mediterranean and Atlantic ſeas.

HERCYNIA silva (anc. geog.), the largeſt of foreſts. Its breadth was a journey of nine days to the beſt traveller. Taking its riſe at the limits of the Helvetii, Nemetes, and Rauraci, it run along the Danube to the borders of the Daci and Anartes, a length of 60 days journey, according to Cæſar, who appears to have been well acquainted with its true breadth, ſeeing it occupied all Lower Germany. It may therefore be conſidered as covering the whole of Germany; and moſt of the other foreſts may be conſidered as parts of it, though diſtinguiſhed by particular names: conſequently the Hartz, in the duchy of Brunſwic, which gave name to the whole, may be conſidered as one of its parts. The name *Hartz* denotes "reſinous," or "pine-trees." By the Greeks it is called *Orcynius*, as a name common to all the foreſts in Germany: in the ſame manner as *Hercynius* was the name given by the Romans; and both from the German *Hartz*.

HERD, among hunters, an aſſemblage of black or fallow beaſts in contradiſtinction to *flock*. See Flock.—In the hunting language there are various terms uſed for companies of the divers kinds of game. We ſay a *herd* of harts or bucks, a *bevy* of roes, a *rout* of wolves, a *richeſs* of martins, &c.

HEREDITAMENTS, whatever moveable things a perſon may have to himſelf and his heirs by way of inheritance; and which, if not otherwiſe bequeathed, deſcend to him who is next heir, and not to the executor as chattels do.

HEREDITARY, an appellation given to whatever belongs to a family by right of ſucceſſion from heir to heir.

HEREDITARY is alſo figuratively applied to good or ill qualities ſuppoſed to be tranſmitted from father to ſon: thus we ſay virtue and piety are hereditary qualities in ſuch a family; and that in Italy the hatred of families is hereditary. And indeed the gout, king's evil, madneſs, &c. may really be hereditary diſeaſes.

HEREDITARY Right, in the Britiſh conſtitution. The grand fundamental maxim upon which the *jus coronæ*, or right of ſucceſſion to the throne of Britain depends, Sir William Blackſtone takes to be this: That the crown is, by common law and conſtitutional cuſtom, hereditary; and this in a manner peculiar to itſelf: but that the right of inheritance may from time to time be changed or limited by act of parliament; under which limitations the crown ſtill continues hereditary.

1. The crown is in general hereditary, or deſcendible to the next heir, on the death or demiſe of the laſt proprietor. All regal governments muſt be either hereditary or elective: and as there is no inſtance wherein the crown of England has ever been aſſerted to be elective, except by the regicides at the infamous and unparalleled trial of king Charles I. it muſt of conſequence be hereditary. Yet in thus aſſerting, an hereditary right, a *jure divino* title to the throne is by no means intended. Such a title may be allowed to have ſubſiſted under the theocratic eſtabliſhments of the children of Iſrael in Paleſtine: but it never yet ſubſiſted in any other country; ſave only ſo far as kingdoms, like other human fabrics, are ſubject to the general and ordinary diſpenſations of Providence. Nor indeed have a *jure divino* and an hereditary right any neceſſary connection with each other; as ſome have very weakly imagined. The titles of David and Jehu were equally *jure divino* as thoſe of either Solomon or Ahab; and yet David ſlew the ſons of his predeceſſor, and Jehu his predeceſſor himſelf. And when our kings have the ſame warrant as they had, whether it be to ſit upon the throne of their fathers, or to deſtroy the houſe of the preceding ſovereign, they will then and not before poſſeſs the crown of England by a right like theirs, immediately derived from heaven. The hereditary right, which the laws of England acknowledge, owes its origin to the founders of our conſtitution, and to them only. It has no relation to, nor depends upon, the civil laws of the Jews, the Greeks, the Romans, or any other nation upon earth; the municipal laws of one ſociety having no connection with, or influence upon, the fundamental polity of another. The founders of the Engliſh monarchy might perhaps, if they had thought proper, have made it an elective monarchy; but they rather choſe, and upon good reaſon to eſtabliſh originally a ſucceſſion by inheritance.—This has been acquieſced in by general conſent, and ripened by degrees into common law: the very ſame title that every private man has to his own eſtate. Lands are not naturally deſcendible, any more than thrones: but the law has thought proper, for the benefit and peace of the public, to eſtabliſh hereditary ſucceſſion in the one as well as the other.

It muſt be owned, an elective monarchy ſeems to be the moſt obvious, and beſt ſuited of any to the rational principles of government, and the freedom of human nature: and accordingly we find from hiſtory, that, in the infancy and firſt rudiments of almoſt every ſtate, the leader, chief magiſtrate, or prince, hath uſually been elective. And, if the individuals who compoſe that ſtate could always continue true to firſt principles, uninfluenced by paſſion or prejudice, unaſſailed by corruption, and unawed by violence, elective ſucceſſion were as much to be deſired in a kingdom as in other inferior communities. The beſt, the wiſeſt, and the braveſt man, would then be ſure of receiving that crown which his endowments have merited; and the ſenſe of an unbiaſſed majority would be dutifully acquieſced in by the few who were of different opinions. But hiſtory and obſervation will inform us, that elections of every kind (in the preſent ſtate of human nature) are too frequently brought about by influence, partiality and artifice: and, even where the caſe is otherwiſe, theſe practices will be often ſuſpected, and conſequently charged upon the ſucceſsful, by a ſplenetic diſappointed minority. This is an evil to which all ſocieties are liable; as well thoſe of a private and domeſtic kind, as the great community of the public, which regulates and includes the reſt. But in the former there is this advantage, That ſuch ſuſpicions, if falſe, proceed no farther than jealouſies and murmurs, which time will effectually ſuppreſs; and, if true, the injuſtice may be remedied by legal means, by an appeal to thoſe tribunals to which every member of ſociety has (by becoming ſuch) virtually engaged to ſubmit. Whereas, in the great and independent ſociety, which every nation compoſes, there is no ſuperior to reſort to but the law of nature; no method to redreſs the infringements of that law, but the actual exertion of private force. As therefore between two nations, complaining of mutual injuries, the quarrel can only be decided by the law of arms; ſo in one and the ſame nation, when the fundamental principles of their common union are ſuppoſed to be invaded, and more eſpecially when the appointment of their chief magiſtrate is alledged to be unduly made; the only tribunal to which the complainants can appeal is that of the God of battles, the only proceſs by which the appeal can be carried on is that of a civil and inteſtine war. An hereditary ſucceſſion to the crown is therefore now eſtabliſhed in Britain, and moſt other countries, in order to prevent that periodical bloodſhed and miſery, which the hiſtory of ancient imperial Rome, and the more modern experience of Poland and Germany, may ſhow us are the conſequences of elective kingdoms.

2. But, ſecondly, as to the particular mode of inheritance, It in general correſponds with the feodal path of deſcents, chalked out by the common law in the ſucceſſion to landed eſtates; yet with one or two material exceptions. Like them, the crown will deſcend lineally to the iſſue of the reigning monarch; as it did from king John to Richard II. through a regular pedigree of ſix lineal generations: As in them the preference of males to females, and the right of primogeniture among the males, are ſtrictly adhered to. Thus Edward V. ſucceeded to the crown, in preference to Richard his younger brother, and Elizabeth his eldeſt ſiſter. Like them, on failure of the male line, it deſcends to the iſſue female; according to the ancient Britiſh cuſtom remarked by Tacitus, *Solent fœminarum ductu bellare, et ſexum in imperiis non diſcernere.* Thus Mary I. ſucceeded to Edward VI. and the line of Margaret queen of Scots, the daughter of Henry VII.

ſucceeded, on failure of the line of Henry VIII. his ſon. But among the females, the crown deſcends by right of primogeniture to the eldeſt daughter only and her iſſue; and not, as in common inheritances, to all the daughters at once; the evident neceſſity of a ſole ſucceſſion to the throne having occaſioned the royal law of deſcents to depart from the common law in this reſpect: and therefore queen Mary, on the death of her brother, ſucceeded to the crown alone, and not in partnerſhip with her ſiſter Elizabeth. Again, the doctrine of repreſentation prevails in the deſcent of the crown, as it does in other inheritances; whereby the lineal deſcendants of any perſon deceaſed ſtand in the ſame place as their anceſtor, if living, would have done. Thus Richard II. ſucceeded his grandfather Edward III. in right of his father the black prince; to the excluſion of all his uncles, his grandfather's younger children. Laſtly, on failure of lineal deſcendants, the crown goes to the next collateral relations of the late king; provided they are lineally deſcended from the blood-royal, that is, from that royal ſtock which originally acquired the crown. Thus Henry I. ſucceeded to William II. John to Richard I. and James I. to Elizabeth; being all derived from the Conqueror, who was then the only regal ſtock. But herein there is no objection (as in the caſe of common deſcents) to the ſucceſſion of a brother, an uncle, or other collateral relation, of the half-blood; that is, where the relationſhip proceeds not from the ſame couple of anceſtors (which conſtitutes a kinſman of the whole blood), but from a ſingle anceſtor only; as when two perſons are derived from the ſame father, and not from the ſame mother, or *vice verſa:* provided only, that the one anceſtor, from whom both are deſcended, be that from whoſe veins the blood royal is communicated to each. Thus Mary I. inherited to Edward VI. and Elizabeth inherited to Mary; all born of the ſame father, king Henry VIII. but all by different mothers. See the articles CONSANGUINITY, DESCENT, and SUCCESSION.

3. The doctrine of hereditary right does by no means imply an indefeaſible right to the throne. No man will aſſert this, who has conſidered our laws, conſtitution, and hiſtory, without prejudice, and with any degree of attention. It is unqueſtionably in the breaſt of the ſupreme legiſlative authority of this kingdom, the king and both houſes of parliament, to defeat this hereditary right; and, by particular entails, limitations, and proviſions, to exclude the immediate heir, and veſt the inheritance in any one elſe. This is ſtrictly conſonant to our laws and conſtitution; as may be gathered from the expreſſion ſo frequently uſed in our ſtatute-book, of "the king's majeſty, his heirs, and ſucceſſors." In which we may obſerve, that as the word heirs neceſſarily implies an inheritance or hereditary right generally ſubſiſting in the royal perſon; ſo the word *ſucceſſors*, diſtinctly taken, muſt imply that this inheritance may ſometimes be be broken through; or, that there may be a ſucceſſor, without being the heir of the king. And this is ſo extremely reaſonable, that without ſuch a power, lodged ſomewhere, our polity would be very defective. For, let us barely ſuppoſe ſo melancholy a caſe, as that the heir-apparent ſhould be a lunatic, an idiot, or otherwiſe incapable of reigning; how miſerable would the condition of the nation be, if he were alſo incapable of being ſet aſide! —It is therefore neceſſary that this power ſhould be lodged ſomewhere; and yet the inheritance and regal dignity would be very precarious indeed, if this power were expreſsly and avowedly lodged in the hands of the ſubject only, to be exerted whenever prejudice, caprice, or diſcontent, ſhould happen to take the lead. Conſequently it can no where be ſo properly lodged as in the two houſes of parliament, by and with the conſent of the reigning king; who, it is not to be ſuppoſed, will agree to any thing improperly prejudicial to the rights of his own deſcendants. And therefore in the king, lords, and commons, in parliament aſſembled, our laws have expreſsly lodged it.

4. But, fourthly, However the crown may be limited or transferred, it ſtill retains its deſcendible quality, and becomes hereditary in the wearer of it. And hence in our law the king is ſaid never to die in his political capacity; though, in common with other men, he is ſubject to mortality in his natural: becauſe immediately upon the natural death of Henry, William, or Edward, the king ſurvives in his ſucceſſor. For the right of the crown veſts, *eo inſtanti*, upon his heir; either the *hæres natus*, if the courſe of deſcent remains unimpeached, or the *hæres factus*, if the inheritance be under any particular ſettlement. So that there can be no interregnum; but, as Sir Matthew Hale obſerves, the right of ſovereignty is fully inveſted in the ſucceſſor by the very deſcent of the crown. And therefore, however acquired, it becomes in him abſolutely hereditary, unleſs by the rules of the limitation it is otherwiſe ordered and determined; In the ſame manner as landed eſtates, to continue our former compariſon, are by the law hereditary, or deſcendible to the heirs of the owner; but ſtill there exiſts a power, by which the property of thoſe lands may be transferred to another perſon. If this transfer be made ſimply and abſolutely, the lands will be hereditary in the new owner, and deſcend to his heir at law: but if the transfer be clogged with any limitations, conditions, or entails, the lands muſt deſcend in that channel, ſo limitted and preſcribed, and no other. See SUCCESSION.

HEREDITAS JACENS, in Scots law. An eſtate is ſaid to be *in heridatate jacente*, after the proprietor's death till the heir's entry.

HEREFORD, which in Saxon ſignifies *the ford of the army*, the capital of Herefordſhire in England, ſituated in W. Long. 2. 35. N. Lat. 52. 6. It is ſuppoſed to have riſen out of the ruins of Kencheſter, in its neighbourhood, which Cambden believes to have been the *Ariconium* of Antonnius. It is very pleaſantly ſituated among meadows and corn-fields, and is almoſt encompaſſed with rivers. It ſeems to have owed its riſe, or at leaſt its increaſe, to the building and dedicating a church there to Ethelbert king of the Eaſt-Angles, who was murdered in the neighbourhood, and afterwards taken into the catalogue of martyrs; ſoon after it became a biſhop's ſee, and in conſequence of that a conſiderable place. In 1055 it was ſacked, the cathedral deſtroyed, and its biſhop Leogar carried away captive by Griffin prince of South Wales, and Algar, an Engliſhman, who had rebelled againſt Edward the Confeſſor. Harold fortified it with a broad and high rampart; and it appears by

Hereford,
Hereford-
ſhire.

by Doomſday-book, that there were no more than 300 men within and without the wall. A very large and ſtrong caſtle was built by the Normans along the Wye, and the city walled round. The preſent ſtately cathedral was founded in the reign of Henry I. by biſhop Reinelm, but enlarged and beautified by his ſucceſſors. It ſuffered much in the barons wars; and was often taken and retaken in the war between king Charles I. and the parliament. This city is pretty large, and had once ſix churches; but two were deſtroyed in the civil wars. It is not very populous nor well built, many of the houſes being old. Its manufactures are gloves and other leathern goods; and its corporation conſiſts of a mayor, ſix aldermen, a high-ſteward, deputy-ſteward, and town-clerk, who have a ſword-bearer, and four ſerjeants at mace. Each of the companies enjoys diſtinct laws and privileges by their charter, and each has its hall. The cathedral, which was built in 1050, and deſtroyed by the Welſh in 1060, but rebuilt in the reign of the conqueror, or, as ſome ſay, in that of Henry I. is a beautiful and magnificent ſtructure, but being greatly decayed, part of it was deſtroyed by the fall of the tower in September 1786, and the ſpire on another tower was taken down to be rebuilt at the ſame time. Here is an hoſpital well endowed for 16 poor people; and two charity ſchools, one for 60 boys, the other for 40 girls. The chapter-houſe, which was once a very elegant building, built about the year 1079, is now in ruins. Here were formerly two or three priories. Almoſt the only drink here is cyder, which is both cheap and good, the very hedges in the country being planted with apple-trees. The city gave long the title of *earl* to the noble family of the Bohuns; then of *duke* to Henry of Lancaſter, afterwards Henry IV. king of England; after him, of *earl* to Stafford earl of Buckingham; then of *viſcount* to D'Evereux earl of Eſſex, which a collateral branch of this family ſtill enjoys, and is thereby the premier viſcount of England.

Hertfordshire, a county of England, nearly of a circular form, bounded on the eaſt by Worceſter and Glouceſter, on the ſouth by Monmouthſhire, on the weſt by Radnorſhire and Brecknockſhire, and on the north by Shropſhire. Its length from north to ſouth is 46 miles, its breadth from eaſt to weſt 40, and its circumference 220. It contains 8 market-towns, 87 vicarages, 176 pariſhes, and 391 villages, 15,000 houſes, and 97,600 inhabitants. It is divided into 11 hundreds, and ſends eight members to parliament, namely, two knights for the ſhire, and two for each of the following towns, Hereford, Lemſter or Leominſter, and Weobly.

The air of this county is allowed to be as pleaſant, ſweet, and wholeſome, as that of any other in England, there being nothing either in the ſoil or ſituation to render it otherwiſe. The ſoil throughout is excellent and inferior to none, either for grain, fruit, or paſture, ſupplying the inhabitants plentifully with all the neceſſaries of life: but that by which it is diſtinguiſhed from moſt others, is its fruit, eſpecially apples, of which it produces ſuch quantities, that the cyder made of them is not only ſufficient for their own conſumption, though it is their ordinary drink, but alſo in a great meaſure for that of London and other parts. That in particular which is made from the apple called *redſtreak*, is much admired, and has a body almoſt equal to that of white-wine. The county is well ſupplied with wood and water; for, beſides, leſſer ſtreams, there are the rivers Frome, Loden, Lug, Wye, Wadel, Arrow, Dare, and Monow; the laſt of which is large, and all of them are well ſtored with fiſh, particularly the Wye, which breeds ſalmon. It lies in the dioceſe of Hereford, and Oxford circuit.

Herenhauſen
||
Hereſy.

HERENHAUSEN, a palace of Germany near Hanover, belonging to the king of Great Britain. Here are lodgings for all the court; and a garden of vaſt extent, in which are fine waterworks, a labyrinth, and many other curioſities worthy the obſervation of a traveller.

HERENTHALS, a town of Brabant in the Auſtrian Netherlands, in the quarter of Antwerp; ſeated on the river Nethe, in E. Long. 4. 51. N. Lat. 51. 9.

HERESY, in law, an offence againſt Chriſtianity, conſiſting in a denial of ſome of its eſſential doctrines, publicly and obſtinately avowed; being defined, "*ſententia rerum divinarum humano ſenſu excogitata, palam docta et pertinaciter defenſa.*" And here it muſt be acknowledged that particular modes of belief or unbelief, not tending to overturn Chriſtianity itſelf, or to ſap the foundations of morality, are by no means the object of coercion by the civil magiſtrate. What doctrines ſhall therefore be adjudged hereſy, was left by our old conſtitution to the determination of the eccleſiaſtical judge; who had herein a moſt arbitrary latitude allowed him. For the general definition of an heretic given by Lyndewode, extends to the ſmalleſt deviations from the doctrines of the holy church: "*hæreticus eſt qui dubitat de fide catholica, et qui negligit ſervare ea, quæ Romana eccleſia ſtatuit, ſeu ſervare decreverat.*" Or, as the ſtatute 2 Hen. IV. c. 15. expreſſes in Engliſh, "teachers of erroneous opinions, contrary to the faith and bleſſed determinations of the holy church." Very contrary this to the uſage of the firſt general councils, which defined all heretical doctrines with the utmoſt preciſion and exactneſs. And what ought to have alleviated the puniſhment, the uncertainty of the crime, ſeems to have enhanced it in thoſe days of blind zeal and pious cruelty. It is true, that the ſanctimonious hypocriſy of the canoniſts went at firſt no farther than enjoining pennance, excommunication, and eccleſiaſtical deprivation, for hereſy; tho' afterwards they proceeded boldly to impriſonment by the ordinary, and confiſcation of goods *in pios uſus*. But in the mean time they had prevailed upon the weakneſs of bigotted princes to make the civil power ſubſervient to their purpoſes, by making hereſy not only a temporal, but even a capital, offence; the Romiſh eccleſiaſtics determining, without appeal, whatever they pleaſed to be hereſy; and ſhifting off to the ſecular arm the odium and drudgery of executions; with which they themſelves were too tender and delicate to intermeddle. Nay, they pretended to intercede and pray, on behalf of the convicted heretic, *ut citra mortis periculum ſententia circa eum moderetur*: well knowing that at the ſame time they were delivering the unhappy victim to certain death. Hence the capital puniſhments inflicted on the ancient Donatiſts and Manichæans by the emperors Theodoſius and Juſtinian: hence alſo the conſtitution of the emperor Frederic mentioned by Lyndewode, adjudging all perſons without

Black. Comment.

out diſtinction to be burnt with fire who were convicted of hereſy by the eccleſiaſtical judge. The ſame emperor, in another conſtitution, ordained, that if any temporal lord, when admoniſhed by the church, ſhould neglect to clear his territories of heretics within a year, it ſhould be lawful for good catholics to ſeize and occupy the lands, and utterly to exterminate the heretical poſſeſſors. And upon this foundation was built that arbitrary power, ſo long claimed and ſo fatally exerted by the Pope, of diſpoſing even of the kingdoms of refractory princes to more dutiful ſons of the church. The immediate event of this conſtitution was ſomething ſingular, and may ſerve to illuſtrate at once the gratitude of the holy ſee, and the juſt puniſhment of the royal bigot; for, upon the authority of this very conſtitution, the pope afterwards expelled this very emperor Frederic from his kingdom of Sicily, and gave it to Charles of Anjou.

Chriſtianity being thus deformed by the dæmon of perſecution upon the continent, we cannot expect that our own iſland ſhould be entirely free from the ſame ſcourge. And therefore we find among our ancient precedents a writ *de hæretico comburendo*, which is thought by ſome to be as ancient as the common law itſelf. However, it appears from thence, that the conviction of hereſy by the common law was not in any petty eccleſiaſtical court, but before the archbiſhop himſelf in a provincial ſynod; and that the delinquent was delivered over to the king to do as he ſhould pleaſe with him: ſo that the crown had a controul over the ſpiritual power, and might pardon the convict by iſſuing no proceſs againſt him; the writ *de hæretico comburendo* being not a writ of courſe, but iſſuing only by the ſpecial direction of the king in council.

But in the reign of Henry IV. when the eyes of the Chriſtian world began to open, and the ſeeds of the Proteſtant religion (though under the opprobious name of *lollardy*) took root in this kingdom; the clergy, taking advantage from the king's dubious title to demand an increaſe of their own power, obtained an act of parliament, which ſharpened the edge of perſecution to its utmoſt keeneſs. For, by that ſtatute, the dioceſan alone, without the intervention of a ſynod, might convict of heretical tenets; and unleſs the convict abjured his opinions, or if after abjuration he relapſed, the ſheriff was bound *ex officio*, if required by the biſhop, to commit the unhappy victim to the flames, without waiting for the conſent of the crown. By the ſtatute 2 Hen. V. c. 7. lollardy was alſo made a temporal offence, and indictable in the king's courts; which did not thereby gain an excluſive, but only a concurrent, juriſdiction with the biſhop's conſiſtory.

Afterwards, when the final reformation of religion began to advance, the power of the eccleſiaſtics was ſomewhat moderated; for though what hereſy *is*, was not then preciſely defined, yet we are told in ſome points what it *is not*: the ſtatute 25 Hen. VIII. c. 14. declaring, that offences againſt the ſee of Rome are not hereſy; and the ordinary being thereby reſtrained from proceeding in any caſe upon mere ſuſpicion; that is, unleſs the party be accuſed by two credible witneſſes, or an indictment of hereſy be firſt previouſly found in the king's courts of common law. And yet the ſpirit of perſecution was not yet abated, but only diverted into a lay channel. For in ſix years afterwards, by ſtatute 31 Hen. VIII. c. 14. the bloody law of the ſix articles was made, which eſtabliſhed the ſix moſt conteſted points of popery, tranſubſtantiation, communion in one kind, the celibacy of the clergy, monaſtic vows, the ſacrifice of the maſs, and auricular confeſſion; which points were "determined and reſolved by the moſt godly ſtudy, pain, and travail of his majeſty; for which his moſt humble and obedient ſubjects, the lords *ſpiritual* and temporal and the commons, in parliament aſſembled, did not only render and give unto his highneſs their moſt high and hearty thanks;" but did alſo enact and declare all oppugners of the firſt to be heretics, and to be burnt with fire; and of the five laſt to be felons, and to ſuffer death. The ſame ſtatute eſtabliſhed a new and mixed juriſdiction of clergy and laity for the trial and conviction of heretics; the reigning prince being then equally intent on deſtroying the ſupremacy of the biſhops of Rome, and eſtabliſhing all other their corruptions of the Chriſtian religion.

Without perplexing this detail with the various repeals and revivals of theſe ſanguinary laws in the two ſucceeding reigns, let us proceed to the reign of queen Elizabeth; when the reformation was finally eſtabliſhed with temper and decency, unſullied with party-rancour, or perſonal caprice and reſentment. By ſtatute 1 Eliz. c. 1. all former ſtatutes relating to hereſy are repealed, which leaves the juriſdiction of hereſy as it ſtood at common law; *viz.* as to the infliction of common cenſures, in the eccleſiaſtical courts; and in caſe of burning the heretic, in the provincial ſynod only. Sir Mathew Hale is indeed of a different opinion, and holds that ſuch power reſided in the dioceſan alſo; tho' he agrees, that in either caſe the writ *de hæretico comburendo* was not demandable of common right, but grantable or otherwiſe merely at the king's diſcretion. But the principal point now gained was, that by this ſtatute a boundary is for the firſt time ſet to what ſhall be accounted hereſy; nothing for the future being to be ſo determined, but only ſuch tenets, which have been heretofore ſo declared, 1. By the words of the canonical ſcriptures; 2. By the firſt four general councils, or ſuch others as have only uſed the words of the holy Scriptures; or, 3. Which ſhall hereafter be ſo declared by the parliament, with the aſſent of the clergy in convocation. Thus was hereſy reduced to a greater certainty than before; though it might not have been the worſe to have defined it in terms ſtill more preciſe and particular; as a man continued ſtill liable to be burnt, for what perhaps he did not underſtand to be hereſy, till the eccleſiaſtical judge ſo interpreted the words of the canonical ſcriptures.

For the writ *de hæretico comburendo* remained ſtill in force; and we have inſtances of its being put in execution upon two Anabaptiſts in the ſeventeenth of Elizabeth, and two Arians in the ninth of James I. But it was totally aboliſhed, and hereſy again ſubjected only to eccleſiaſtical correction, *pro ſalute animæ*, by virtue of the ſtatute 29 Car. II. c. 9: for, in one and the ſame reign, our lands were delivered from the ſlavery of military tenure; our bodies from arbitrary impriſonment by the *habeas corpus* act; and our minds from the tyranny of ſuperſtitious bigotry, by demoliſhing this laſt badge of perſecution in the Engliſh law.

Every thing is now as it ſhould be, with reſpect to the ſpiritual cognizance, and ſpiritual puniſhment of hereſy: unleſs perhaps that the crime ought to be more ſtrictly defined, and no proſecution permitted, even in the eccleſiaſtical courts, till the tenets in queſtion are by proper authority previouſly declared to be heretical. Under theſe reſtrictions, it has been deemed neceſſary for the ſupport of the national religion, that the officers of the church ſhould have power to cenſure heretics; yet not to haraſs them with temporal penalties, much leſs to exterminate or deſtroy them. The legiſlature in England hath indeed thought it proper, that the civil magiſtrate ſhould again interpoſe, with regard to one ſpecies of hereſy, very prevalent in modern times; for by ſtatute 9 & 10 W. III. c. 32. if any perſon educated in the Chriſtian religion, or profeſſing the ſame, ſhall by writing, printing, teaching, or adviſed ſpeaking, deny any one of the perſons in the holy Trinity to be God, or maintain that there are more gods than one, he ſhall undergo the ſame penalties and incapacities which were juſt now mentioned to be inflicted on apoſtaſy by the ſame ſtatute.

HERETIC, a general name for all ſuch perſons under any religion, but eſpecially the Chriſtian, as profeſs to teach religious opinions contrary to the eſtabliſhed faith, or to what is made the ſtandard of orthodoxy. See Hereſy.

HERETOCHS, among the ancient Saxons ſignified the ſame with dukes or duces, denoting the commanders or leaders of their armies.

It appears, from Edward the Confeſſor's laws, that the military force of the kingdom was in the hands of the dukes or heretochs, who were conſtituted through every province and county in the kingdom, being ſelected out of the principal nobility, and ſuch as were moſt remarkable for being *ſapientes, fideles, & animoſi.* Their duty was to lead and regulate the Engliſh armies, with a very unlimited power; and becauſe of their great power, they were elected by the people in their full aſſembly, or folkmote, in the ſame manner as ſheriffs were elected.

HERFORDEN, or Herwarden, a free and imperial town of Germany, in the circle of Weſtphalia, and capital of the county of Ravenſberg. Here is a famous nunnery belonging to the Proteſtants of the confeſſion of Augſburg, whoſe abbeſs is a princeſs of the empire, and has a voice and place in the diet. It is ſeated on the river Aa. E. Long. 8. 47 N. Lat. 52. 12.

HERGUNDT, a town of Upper Hungary, remarkable for its rich mines of vitriol. Thoſe who work in the mines have built a ſubterraneous town, which has a great number of inhabitants. E. Long. 18. 15. N. Lat. 48. 30.

HERIOT, in law, a cuſtomary tribute of goods and chattels, payable to the lord of the fee on the deceaſe of the owner of the land. See Tenure.

Heriot is two ſorts—viz. 1. Heriot-cuſtom, where heriots have been paid time out of mind by cuſtom, after the death of a tenant for life. In ſome places, there is a cuſtomary compoſition in money, as 10 or 20 ſhillings in lieu of a heriot, by which the lord and tenant are both bound, if it be an indiſputably ancient cuſtom; but a new compoſition of this ſort will not bind the repreſentatives of either party. 2. Heriot-ſervice, when a tenant holds by ſuch ſervice to pay heriot at the time of his death; which ſervice is expreſſed in the deed of feoffment.—For this latter the lord ſhall diſtrain; and for the other he ſhall ſeize, and not diſtrain. If the lord purchaſe part of the tenancy, heriot-ſervice is extinguiſhed; but it is not ſo of heriot-cuſtom.

HERISSON, in fortification, a beam armed with a great number of iron ſpikes with their points outwards, and ſupported by a pivot on which it turns. Theſe ſerve as a barrier to block up any paſſage, and are frequently placed before the gates, and more eſpecially the wicket-doors, of a town or fortreſs, to ſecure thoſe paſſages which muſt of neceſſity be often opened and ſhut.

HERITABLE rights, in Scots law, ſignify all rights affecting lands, houſes, &c. or any immoveable ſubject.

HERITAGE, in Scots law, lands, houſes, or any immoveable ſubject, in contradiſtinction to moveables or moveable ſubjects. It alſo ſometimes ſignifies ſuch immoveable property as a perſon ſucceeds to as heir to another, in contradiſtinction to that which he himſelf purchaſes or acquires in any other manner, called *conqueſt.*

HERMÆA, in antiquity, ancient Greek feſtivals in honour of the god Hermes or Mercury. One of theſe was celebrated by the Pheneatæ in Arcadia; a ſecond by the Cyllenians in Elis; and a third by the Tanagræans, where Mercury was repreſented with a ram upon his ſhoulder, becauſe he was ſaid to have walked thro' the city in that poſture in time of a plague, and to have cured the ſick; in memory of which, it was cuſtomary at this feſtival for one of the moſt beautiful youths in the city to walk round the walls with a ram upon his ſhoulder.—A fourth feſtival of the ſame name was obſerved in Crete, when it was uſual for the ſervants to ſit down at the table while their maſters waited; a cuſtom which was alſo obſerved at the Roman Saturnalia.

HERMAN (Paul), a famous botaniſt in the 17th century, was born at Hall in Saxony. He practiſed phyſic in the iſle of Ceylon, and was afterwards made profeſſor of botany at Leyden, where he died in 1695. He wrote a catalogue of the plants in the public garden at Leyden, and a work intitled *Floræ Lugduno-Bataviæ flores.*

HERMANN (James) a learned mathematician of the academy at Berlin, and a member of the academy of ſciences at Paris, was born at Baſil in 1678. He was a great traveller, and for ſix years was profeſſor of mathematics at Padua. He afterwards went to Muſcovy, being invited thither by the Czar in 1724. At his return to his native country, he was made profeſſor of morality and natural law at Baſil; and died there in 1733. He wrote ſeveral mathematical works.

HERMANNIA, in botany: a genus of the pentandria order, belonging to the monodelphia claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ.* The capſule is quinquelocular; the petals at the baſe are ſemitubulated and oblique.

Species. 1. The lavendulifolia, hath a ſhrubby ſtalk and ſlender branches, very buſhy, about a foot and an half high, ſmall, ſpear-ſhaped, obtuſe and hairy leaves, with cluſters of ſmall yellow flowers along the ſides of the branches, continuing from June to Autumn. 2. The althæifolia hath a ſhrubby ſtalk, and ſoft woolly branches, growing two feet high; with numerous yellow flowers in looſe ſpikes growing at the end of the branches, and making their appearance in July. 3. The groſſularifolia hath a ſhrubby ſtalk and ſpreading branches, growing three or four feet high, with bright yellow flowers coming out in great numbers at the ends of all the ſhoots and branches in April or May. 4. The alnifolia hath a ſhrubby ſtalk and branches growing irregularly four or five feet high, with pale yellow flowers in ſhort ſpikes from the ſides and ends of the branches appearing in April or May. 3. The hyſſopifolia hath a ſhrubby upright ſtalk, branching out laterally ſix or ſeven feet high, with pale yellow flowers in cluſters from the ſides of the branches, appearing in May and June. There are 14 other ſpecies.

Culture. All theſe plants are natives of Africa, and therefore muſt be kept in a green-houſe during the winter in Britain. They are propagated by cuttings of their young ſhoots, which may be planted in pots of rich earth any time from April to July.

HERMANSTADT, a handſome, populous, and ſtrong town of Hungary, capital of Tranſilvania, with a biſhop's ſee. It is the reſidence of the governor of the province; and ſeated on the river Ceben, in E. Long. 23. 40. N. Lat. 46. 25.

HERMANT (Godfrey), a learned doctor of the Sorbonne, born at Beauvais in 1617. He wrote many excellent works; the principal of which are, 1. The lives of St Athanaſius, St Baſil, St Gregory Nazianzen, St Chryſoſtom, and St Ambroſe. 2. Four pieces in defence of the rights of the univerſity of Paris againſt the Jeſuits. 3. A French tranſlation of St Chryſoſtom's Treatiſe of Providence, and St Baſil's Aſcetics. 4. Extracts from the councils; publiſhed after his death, under the title of *Clavis diſciplinæ eccleſiaſticæ.* He died ſuddenly at Paris in 1690.

HERMAPHRODITE, is generally underſtood to ſignify a human creature poſſeſſed of both ſexes, or who has the parts of generation both of male and female. The term however is applied alſo to other animals, and even to plants.—The word is formed of the Greek Ερμαφροδιτος, a compound of Ερμες *Mercury*, and Αφροδιτη *Venus*; *q. d.* a mixture of Mercury and Venus, *i. e.* of male and female. For it is to be obſerved, *Hermaphroditus* was originally a proper name; applied by the heathen mythologiſts to a fabulous deity, whom ſome repreſent as a ſon of *Hermes*, Mercury, and *Aphrodite*, Venus; and who, being deſperately in love with the nymph Salmaſis, obtained of the gods to have his body and hers united into one. Others ſay, that the god Hermaphroditus was conceived as a compoſition of Mercury and Venus; to exhibit the union between eloquence or rather commerce, whereof Mercury was god, with pleaſure, whereof Venus was the proper deity. Laſtly, others think this junction intended to ſhow that Venus (pleaſure) was of both ſexes; as in effect, the poet Calvus calls Venus a god.

Pollentemque Deum Venerem.

As alſo Virgil, *Æneid.* lib. ii.

Diſcedo, ac ducente Deo flammam inter et hoſtes.
Expedior———

M. Spon obſerves, Heſychius calls Venus *Aphroditos*: and Theophraſtus affirms, that Aphroditos or Venus, is *Hermaphroditus*; and that in the iſland of Cyprus ſhe has a ſtatue, which repreſents her with a beard like a man.—The Greeks alſo call *hermaphroditos* ανδρογυνοι *androgyni, q. d.* men-women. See the article ANDROGYNES.

In a treatiſe by Mr Hunter, in the 69th volume of the Philoſophical Tranſactions, hermaphrodites are divided into *natural* and *unnatural* or monſtrous. The firſt belongs to the more ſimple orders of animals, of which there are a much greater number than of the more perfect. The unnatural takes place in every tribe of animals having diſtinct ſexes, but is more common in ſome than in others. The human ſpecies, our author imagines, has the feweſt; never having ſeen them in that ſpecies, nor in dogs; but in horſe, ſheep, and black cattle, they are very frequent.

From Mr Hunter's account, however, it does not appear that ſuch a creature as a perfect hermaphrodite has ever exiſted. All the hermaphrodites which he had the opportunity of ſeeing had the appearance of females, and were generally ſaved as ſuch. In the horſe they are very frequent; and in the moſt perfect of this kind he ever ſaw, the teſticles had come down out of the abdomen into the place where the udder ſhould have been, and appeared like an udder, not ſo pendulous as the ſcrotum in the male of ſuch animals. There were alſo two nipples, of which horſes have no perfect form; being blended in them with the ſheath or prepuce, of which there was none here. The external female parts were exactly ſimilar to thoſe of a perfect female; but inſtead of a common-ſized clitoris, there was one about five or ſix inches long; which when erect, ſtood almoſt directly backwards.

A foal aſs very ſimilar to the above was killed, and the following appearances were obſerved on diſſection. The teſticles were not come down as in the former, poſſibly becauſe the creature was too young. It had alſo two nipples; but there was no penis paſſing round the pubes to the belly, as in the perfect male aſs. The external female parts were ſimilar to thoſe of the ſhe-aſs. Within the entrance of the vagina was placed the clitoris; but much longer than that of a true female, being about five inches long. The vagina was open a little farther than the opening of the urethra into it, and then became obliterated; from thence, up to the fundus of the uterus, there was no canal. At the fundus of the common uterus it was hollow, or had a cavity in it, and then divided into two, viz. a right and a left, called the *horns* of the uterus, which were alſo pervious. Beyond the termination of the two horns were placed the ovaria, as in the true female; but the Fallopian tubes could not be found.—From the broad ligaments, to the edges of which the horns of the uterus and ovaria were attached, there paſſed towards each groin a part ſimilar to the round ligaments in the female, which were continued into the rings of the abdominal muſcles; but with this difference, that there were continued with them a proceſs or theca of the peritonæum, ſimilar to the tunica vaginalis communis in the male aſs; and in theſe thecæ were found the teſticles, but no vaſa deferentia could be obſerved paſſing from them.

In moſt ſpecies of animals, the production of hermaphrodites appears to be the effect of chance; but in the black cattle it ſeems to be an eſtabliſhed principle of their propagation. It is a well-known fact, and, as far as hath yet been diſcovered, appears to be univerſal, that when a cow brings forth two calves, one of them a bull, and the other a cow to appearance, the cow is unfit for propagation, but the bull-calf becomes a very proper bull. They are known not to breed; they do not even ſhow the leaſt inclination for the bull, nor does the bull ever take the leaſt notice of them. Among the country people in England, this kind of calf is called a *free-martin*; and this ſingularity is juſt as well known among the farmers as either cow or bull. When they are preſerved, it is for the purpoſes of an ox or ſpayed heifer; viz. to yoke with the oxen, or fatten for the table. They are much larger than either the bull or the cow, and the horns grow longer and bigger, being very ſimilar to thoſe of an ox. The bellow of a free-martin is alſo ſimilar to that of an ox, and the meat is ſimilar to that of the ox or ſpayed heifer, viz. much finer in the fibre than either the bull or cow; and they are more ſuſceptible of growing fat with good food. By ſome they are ſuppoſed to exceed the ox and heifer in delicacy of taſte, and bear a higher price at market; this, however, does not always hold, and Mr Hunter gives an inſtance of the contrary. The Romans, who called the bull *taurus*, ſpoke alſo of *tauræ* in the feminine gender different from cows. Stephens obſerves, that it was thought they meant by this word *barren cows*, who obtained the name becauſe they did not conceive any more than bulls. He alſo quotes a paſſage from Columella, *lib.* vi. *cap.* 22. "And, like the *tauræ*, which occupy the place of fertile cows, ſhould be rejected or ſent away." He likewiſe quotes Varro, *De re ruſtica*, lib. ii. cap. 5. "The cow which is barren is called *taura*." From which we may reaſonably conjecture, that the Romans had not the idea of the circumſtances of their production.

Of theſe creatures Mr Hunter diſſected three, and the following appearances were obſerved in the moſt perfect of them.—The external parts were rather ſmaller than in the cow. The vagina paſſed on as in the cow to the opening of the urethra, and then it began to contract into a ſmall canal, which paſſed on to the diviſion of the uterus into the two horns; each horn paſſing along the edge of the broad ligament laterally towards the ovaria. At the termination of theſe horns were placed both the ovaria and teſticles, both of which were nearly about the ſize of a ſmall nutmeg. No Fallopian tubes could be found. To the teſticles were vaſa deferentia, but imperfect. The left one did not come near the teſticle; the right only came cloſe to it, but did not terminate in the body called *epididymis*. They were both pervious, and opened into the vagina near the opening of the urethra.—On the poſterior ſurface of the bladder, or between the uterus and bladder, were the two bags called the *veſiculæ ſeminales* in the male, but much ſmaller than what they are in the bull: the ducts opened along with the vaſa deferentia.

Concerning hermaphrodites of the human ſpecies, much has been written, and many laws enacted about them in different nations; but the exiſtence of them is ſtill diſputed. Dr Parſons has given us a treatiſe on the ſubject, in which he endeavours to explode the notion as a vulgar error. According to him, all the hermaphrodites that have appeared, were only women whoſe clitoris from ſome cauſe or other was overgrown; and, in particular, that this was the caſe with an Angola woman ſhown at London as an hermaphrodite ſome time ago.

Among the reptile tribe, indeed, ſuch as worms, ſnails, leeches, &c. hermaphrodites are very frequent. In the memoirs of the French academy, we have an account of this very extraordinary kind of hermaphrodites, which not only have both ſexes, but do the office of both at the ſame time. Such are earth-worms, round-tailed worms found in the inteſtines of men and horſes, land-ſnails, and thoſe of freſh waters, and all the ſorts of leeches. And, as all theſe are reptiles, and without bones, M. Poupart concludes it probable, that all other inſects which have theſe two characters are alſo hermaphrodites.

The method of coupling practiſed in this claſs of hermaphrodites, may be illuſtrated in the inſtance of earth-worms. Theſe little creatures creep, two by two, out of the holes proper to receive them, where they diſpoſe their bodies in ſuch a manner, as that the head of the one is turned to the tail of the other. Being thus ſtretched lengthwiſe, a little connical button or papilla is thruſt forth by each, and received into an aperture of the other. Theſe animals, being male in one part of the body, and female in another, and the body flexible withal, M. Homberg does not think it impoſſible but that an earth-worm may couple with itſelf, and be both father and mother of its young; an obſervation which, to ſome, appears highly extravagant!

Among the inſects of the ſoft or boneleſs kind, there are great numbers indeed, which are ſo far from being hermaphrodites, that they are of no ſex at all. Of this kind are all the caterpillars, maggots, and worms, produced of the eggs of flies of all kinds: but the reaſon of this is plain; theſe are not animals in a perfect ſtate, but diſguiſes under which animals lurk. They have no buſineſs with the propagating of their ſpecies, but are to be transformed into animals of another kind, by the putting off their ſeveral coverings, and then only they are in their perfect ſtate, and therefore then only ſhow the differences of ſex, which are always in the diſtinct animals, each being only male or female. Theſe copulate, and their eggs produce theſe creatures, which ſhow no ſex till they arrive at the perfect ſtate again.

HERMAPHRODITE *Flowers*, in botany. Theſe are ſo called by the ſexualiſts on account of their containing both the antheræ and ſtigma, the ſuppoſed organs of generation, within the ſame calyx and petals. Of this kind are the flowers of all the claſſes in Linnæus's ſexual method, except all the claſſes *monœcia* and *diœcia*; in the former of which, male and female flowers are produced on the ſame root; in the latter, in diſtinct plants from the ſame ſeed.—In the claſs of *polygamia*, there are always hermaphrodite flowers mixed with male or female, or both, either on the ſame or diſtinct roots. In the plain-tree the flowers are all hermaphrodite; in ſome, however, the antheræ or male organ, in others the ſtigma or female organ, proves abortive. The flowers in the former claſs are ſtyled *female hermaphrodites*; in the latter, *male hermaphrodites*.—Hermaphrodites are thus as frequent in the vegetable kingdom as they are rare and ſcarce in the animal one.

HERMAS, an eccleſiaſtical author of the firſt century; and, according to Origen, Euſebius, and Jerome, the ſame whom St Paul ſalutes in the end of his epiſtle to the Romans. He wrote a book in Greek ſome time before Domitian's perſecution, which happened in the year 95. This work is intitled *The Paſtor*, from his repreſenting an angel ſpeaking to him in it under the form of a ſhepherd. The Greek text is loſt, but a very ancient Latin verſion of it is ſtill extant. Some of the fathers have conſidered this book as canonical. The beſt edition of it is that of 1698; where it is to be found among the other apoſtolical fathers, illuſtrated with the notes and corrections of Cotelerius and Le Clerc. With them it was tranſlated into Engliſh by Archbiſhop Wake, the beſt edition of which is that of 1710.

Hermas, in botany; A genus of the monœcia order, belonging to the polygamia claſs of plants. The umbel in the hermaphrodite is terminal; there is an univerſal involucrum and partial ones. The rays of the ſmall umbels are lobed; the central one flower-bearing; there are five petals, and as many barren ſtamina; the ſeeds are two-fold and ſuborbicular. In the male the lateral umbels have univerſal and partial involucra; the ſmall umbels are many-flowered; there are five petals, and five fertile ſtamina.

HERMES, or **Herma**, among antiquaries, a ſort of ſquare or cubical figure of the god Mercury, uſually made of marble, though ſometimes of braſs or other materials, without arms or legs, and planted by the Greeks and Romans in their croſs-ways.

Servius gives us the origin thereof, in his comment on the eighth book of the Æneid. Some ſhepherds, ſays he, having one day caught Mercury, called by the Greeks *Hermes*, aſleep on a mountain cut off his hands; from which he, as well as the mountain where the action was done, became denominated Cyllenius, from κυλλος *maimed*: and thence, adds Servius, it is that certain ſtatues without arms are denominated *Hermeſes* or *Hermæ*. But this etymology of the epithet of Cyllenius contradicts moſt of the other ancient authors; who derive it hence, that Mercury was born at Cyllene, a city of Elis, or even on the mountain Cyllene itſelf, which had been thus called before him.

Suidas gives a moral explication of this cuſtom of making ſtatues of Mercury without arms. The Hermeſes, ſays he, were ſtatues of ſtone placed at the veſtibules or porches of the doors and temples at Athens; for this reaſon, that as Mercury was held the god of ſpeech and of truth, ſquare and cubical ſtatues were peculiarly proper; having this in common with truth, that on what ſide ſoever they are viewed, they always appear the ſame.

It muſt be obſerved, that Athens abounded more than any other place in Hermeſes: there were abundance of very ſignal ones in divers parts of the city, and they were indeed one of the principal ornaments of the place. They were alſo placed in the high-roads and croſs-ways, becauſe Mercury, who was the courier of the gods, preſided over the highways; whence he had his ſurname of Trivius, from *trivium*; and that of Viacus, *via*.

From Suidas's account, above cited, it appears, that the terms *termini*, uſed among us in the door-caſes, balconies, &c. of our buildings, take their origin from theſe Athenian Hermeſes; and that it was more proper to call them *hermetes* than *termini*, becauſe, though the Roman termini were ſquare ſtones, whereon a head was frequently placed, yet they were rather uſed as landmarks and mere ſtones than as ornaments of building. See the articles Mercury and Thoth.

HERMETIC, or *Hermetical-Art*, a name given to chemiſtry, on a ſuppoſition that Hermes Triſmegiſtus was the inventor thereof, or that he excelled therein. See Thoth.

Hermetical Philoſophy is that which undertakes to ſolve and explain all the phenomena of nature, from the three chemical principles, ſalt, ſulphur, and mercury.

Hermetical Phyſic, or *Medicine*, is that ſyſtem or hypotheſis in the art of healing, which explains the cauſes of diſeaſes, and the operations of medicine; on the principles of the hermetical philoſophy, and particularly on the ſyſtem of alkali and acid.

Hermetical Seal, a manner of ſtopping or cloſing glaſs veſſels, for chemical operations, ſo very accurately, that nothing can exhale or eſcape, not even the moſt ſubtile ſpirits. It is performed by heating the neck of the veſſel in the flame of a lamp till it be ready to melt, and then with a pair of pincers twiſting it cloſe together. This they call putting on *Hermes's ſeal*. There are alſo other ways of ſealing veſſels hermetically; viz. by ſtopping them with a plug or ſtopple of glaſs, well luted into the neck of the veſſel; or, by turning another ovum philoſophicum upon that wherein the matter is contained.

HERMHARPOCRATES, or **Hermarpocrates**, in antiquity, a deity, or figure of a deity, compoſed of Mercury, and Harpocrates the god of Silence.

M. Spon gives us a hermharpocrates in his *Rech. Cur. de l'Antiquité*, p. 98. fig. 15. having wings on his feet like Mercury, and laying his finger on his mouth like Harpocrates. It is probable they might mean, by this combination, that ſilence is ſometimes eloquent.

HERMIANI, or **Hermiatitæ**, a ſect of heretics in the ſecond century, thus called from their leader Hermias. They were alſo denominated *Seleuciani*.

One of their diſtinguiſhing tenets was, that God is corporal. Another, that Jeſus Chriſt did not aſcend into Heaven with his body, but left it in the ſun.

HERMIONE (anc. geog.) a conſiderable city of Argolis. It was in ruins (except a few temples) in the time of Pauſanias; who ſays that the new city was at the diſtance of four ſtadia from the promontory on which the temple of Neptune ſtood. It gave name to the Sinus Hermionicus, a part of the Sinus Argolicus.

HERMIT, or **Eremit**, *Eremita*, a devout perſon retired into ſolitude, to be more at leiſure for prayer and contemplation, and to diſencumber himſelf of the affairs of this world.—The word is formed from the Greek ερημος, *deſert* or *wilderneſs*; and, according to the etymology, ſhould rather be wrote *Eremit*.

Paul ſurnamed the *Hermit*, is uſually reckoned the firſt hermit; though St Jerome at the beginning of the life of that ſaint ſays, it is not known who was the firſt.—Some go back to John the Baptiſt, others to Elias: others make St Anthony the founder of the eremetical life; but others think that he only rekindled and heightened the fervour thereof, and hold that the diſciples of that ſaint owned St Paul of Thebes for the firſt who practiſed it. The perſecutions of Decius and Valerian are ſuppoſed to have been the occaſion.—Several of the ancient hermits, as St Anthony, &c. though they lived in deſerts, had yet numbers of religious accompanying them.

There are alſo various orders and congregations of religious diſtinguiſhed by the title of *hermits;* as, hermits of St Auguſtine, of St John Baptiſt, of St Jerom, of St Paul, &c.

HERMIT (Gaytier Peter the), a French officer of Amiens in Picardy, who quitted the military profeſſion, and commenced hermit and pilgrim. Unfortunately he travelled to the Holy Land about the year 1093; and making a melancholy recital of the deplorable ſituation of a few chriſtians in that country to Pope Urban II. and at the ſame time enthuſiaſtically lamenting that Infidels ſhould be in poſſeſſion of the famous city where the Author of Chriſtianity firſt promulgated his ſacred doctrines, Urban gave him a fatal commiſſion to excite all Chriſtian princes to a general war againſt the Turks and Saracens the poſſeſſors of the Holy Land. See CRUSADES.

HERMITAGE properly ſignifies a little hut or habitation, in ſome deſert place, where a hermit dwells.

Hermitage is alſo popularly attributed to any religious cell, built and endowed in a private and recluſe place, and thus annexed to ſome large abbey, of which the ſuperior was called *hermita*.

HERMODACTYL, in the materia medica, a root brought from Turkey. It is of the ſhape of a heart flatted, of a white colour, compact, yet eaſy to cut or powder; of a viſcous ſweetiſh taſte, with a light degree of acrimony. Hermodactyls were of great repute among the ancients as a cathartic; but thoſe we now meet with in the ſhops have very little purgative virtue; Neumann declares he never found them to have any effect at all.—The hermodactyl is the root of the Colchicum variegatum, according to ſome; others ſuppoſe it to be the root of the Iris tuberoſa.

HERMOGENES, the firſt and moſt celebrated architect of antiquity, was, according to Vitruvius, born at Alanbada, a city in Caria. He built a temple of Diana at Magneſia; another of Bacchus at Tros; and was the inventor of ſeveral parts of architecture. He compoſed a book on the ſubject, which is loſt.

HERMOGENES-Tarſenſis, a rhetorician and orator, and who was in every reſpect a prodigy. At 17 years of age he publiſhed his ſyſtem of rhetoric, and at 20 his philoſophic ideas: but at 25 he forgot every thing he had known. It is ſaid, that his body being opened after his death, his heart was found of an extraordinary ſize, and all over hairy. He died about 168 B. C.

HERMOGENIANS, a ſect of ancient heretics, denominated from their leader Hermogenes, who lived towards the cloſe of the ſecond century. Hermogenes eſtabliſhed matter as his firſt principle; and regarding matter as the fountain of all evil, he maintained that the world, and every thing contained in it, as alſo the ſouls of men and other ſpirits, were formed by the Deity from an uncreated and eternal maſs of corrupt matter. The opinions of Hermogenes, with regard to the origin of the world and the nature of the ſoul, were warmly oppoſed by Tertullian.

Hermogenians were divided into ſeveral branches under their reſpective chieftains, viz. Hermiani, Seleucians, Materiari, &c.

HERMON, or AERMON (anc. geog.); a mountain of the Amorites, called *Sanior* by the Phœnicians, and *Sanir* or *Senir* by the Amorites, on the eaſt of Jordan. It is alſo called *Sion*, (Moſes); but muſt not be confounded with the Sion of Jeruſalem. By the Sidonians it was called *Scirion*; in the vulgate, it is called *Sarion*. Joſhua informs us, that it was the dominion of Og king of Baſhan; which muſt be underſtood of its ſouth ſide. It is never particularly mentioned by profane writers; being compriſed under the appellation *Libanus;* or *Antilibanus*, with which mountain it is joined to the eaſt. It is alſo called *Hermonim* plurally, Pſalm. xlii. 6. becauſe it was extenſive, and contained ſeveral mountains.

HERMUS, (anc. geog.), a river of Ionia; which riſing near Dorylæum, a town of Phrygia, in a mountain ſacred to Dindymene or Cybele, touched Myſia, and ran through the Regio Combuſta, then through the plains of Smyrna down to the ſea, carrying along with it the Pactolus, Hyllus, and other leſs noble rivers. Its waters were ſaid to roll down gold, by Virgil and other poets.

HERNANDRIA, JACK-IN-A-BOX-TREE: A genus of the triandria order, belonging to the monœcia claſs of plants; and in the natural method ranking under the 38th order, *Tricoccæ*. The male calyx is tripartite; the corolla tripetalous; the female calyx is truncated, quite entire; the corolla hexapetalous; the plum hollow, and open at the mouth or upper part, with a looſe kernel.

Species. 1. The ſonora, or common jack in-a-box, is a native of both the Indies. It grows 20 or 30 feet high; and is garniſhed with broad peltated leaves, and monœcious flowers, ſucceeded by a large ſwollen hollow fruit formed of the calyx; having a hole or open at the end, and a hard nut within. The wind blowing into the cavity of this fruit makes a very whiſtling and rattling noiſe, whence comes the name. 2. The ovigera grows many feet high, garniſhed with large oval leaves not peltated; and monœcious flowers, ſucceeded by a ſwollen fruit at the end, and a nut within.

Uſes. The ſonora, in Java, affords a ſure antidote againſt poiſon, if you either put its ſmall roots on the wounds or eat them; as was diſcovered to Rumphius by a captive woman in the war between the people of Macaſar and the Dutch in the year 1667. The ſoldiers of the former always carry this root about them, as a remedy againſt wounds with poiſonous arrows.

Culture. Both theſe plants being tender exotics, muſt be planted in pots of rich earth, and always kept in a hot-houſe; in which notwithſtanding all the care that can be taken, they ſeldom flower, and never grow beyond the height of common ſhrubs, tho' in the places where they are natives they arrive at the height of trees. They are propagated by ſeeds procured from the Weſt-Indies.

HERNE, a town of Kent, 6 miles from Canterbury, 12 from Margate, and 14 from Feverſham. It formerly

Hernia, Hero.

merly had a market, and has now a fair on Eaſter-Tueſday. The church is a large ancient ſtructure, with a tower of flint, and has ſix ſtalls of the cathedral kind, with diviſions of the choir from the nave by a carved ſcreen of oak. The church is 113 feet long. The ſtone front is very ancient. Here the great Dr Ridley, the Engliſh martyr, was vicar. Here is a commodious bay, frequented by colliers, &c.

HERNIA, in medicine and ſurgery, a deſcent of the inteſtines or omentum out of their natural place; or rather, the tumour formed by that deſcent, popularly called a rupture. The word is Latin, *hernia*, and originally ſignifies the ſame with *tumor ſcroti*, called alſo *ramex*. Priſcian obſerves, that the ancient Marſi gave the appellation *hernia* to rocks; whence ſome will have hernias thus called *propter duritiem*, on account of their hardneſs. Scaliger chooſes rather to derive the word from the Greek ερνος, *ramus*, branch. See (*Index* to) Surgery.

HERNIARIA, rupture-wort: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 11th order, *Sarmentaceæ*. The calyx is quinquepartite; there is no corolla; there are five barren ſtamina, and a monoſpermous capſule.

Species. There are four ſpecies, of which the only remarkable one is the glabra, or ſmooth rupture-wort, a native of many parts of England. It is a low trailing plant, with leaves like the ſmaller chickweed; the flowers come out in cluſters from the ſide of the ſtalks at the joints, and are of a yellowiſh colour.

Uſes, &c. This plant is a little ſaltiſh and aſtringent. The juice takes away ſpecks in the eye. Cows, ſheep, and horſes, eat the plant; goats and ſwine refuſe it.

HERO, in Pagan mythology, a great and illuſtrious perſon, of a mortal nature, though ſuppoſed by the populace to partake of immortality, and after his death to be placed among the number of the gods. The word is formed of the Latin *heros*, and that of the Greek ηρως *ſemi-deus*, "demi-god."—The Greeks erected columns and other monuments over the tombs of their heroes, and eſtabliſhed a kind of worſhip in honour of the manes both of their heroes and heroines. The Romans alſo raiſed ſtatues in honour of their heroes; but there were ſix of their heroes of a ſuperior order, and who were ſuppoſed to be admitted into the community of the twelve great gods: theſe were Hercules, Bacchus, Eſculapius, Romulus, Caſtor, and Pollux. Writers have diſtinguiſhed between the worſhip which the ancients paid to their heroes and that offered to their gods. The latter, it is ſaid, conſiſted of ſacrifices and libations; the former was only a kind of funeral honour, in which they celebrated their exploits, concluding the rehearſal with feaſts.

Hero is alſo uſed in a more extenſive ſenſe, for a great, illuſtrious, and extraordinary perſonage; particularly in reſpect of valour, courage, intrepidity, and other military virtues.

F. Bouhours makes this diſtinction between a great man and a hero, that the latter is more daring, fierce, and enterpriſing; and the former more prudent, thoughtful, and reſerved. In this ſenſe we properly ſay, Alexander was a hero, Julius Cæſar a great man.

Hero || Herodians.

Hero of a poem or *romance*, is the principal perſonage, or he who has the chief part in it. Thus the hero of the Iliad is Achilles; of the Odyſſey, Ulyſſus; of the Æneid, Æneas; of Taſſo's Jeruſalem, Godfrey of Boulogn; of Milton's Paradiſe Loſt, Adam; though Mr Dryden will have the devil to be Milton's hero, becauſe he gets the better of Adam, and drives him out of Paradiſe.

Hero, in fabulous hiſtory, a famous prieſteſs of Venus, lived at Abydos, in a tower ſituated on the banks of the Helleſpont. She being beloved by Leander, who lived at Seſtos on the other ſide of the ſtrait, he every night ſwam over to viſit her, being directed by a light fixed on a tower. But the light being put out in a ſtormy night, the youth miſſed his way, and was drowned; on which Hero threw herſelf into the ſea, and periſhed.

Hero, the name of two celebrated Greek mathematicians; the one called the *old*, and the other the *young*, *Hero*. The younger was a diſciple of Cteſibius. They are known by two works tranſlated into Latin by Barochius: *Spiralium liber*, by Hero ſenior; and *Tractat. artis et machin. militar.* by Hero junior. They flouriſhed about 130 and 100 B. C.

HEROD, falſely ſtyled the *Great*, king and execrable tyrant of Judæa; who, on the ſtrength of a miſinterpreted prophecy, cauſed all the male children of Bethlehem and its neighbourhood to be maſſacred by his ſoldiers at the time of the birth of Chriſt, in the vain hope of deſtroying the Saviour of mankind. He died, eaten with worms, two or three years after the birth of our Saviour, at the age of 71, after a reign of 40 years. He had ordered that all the perſons of quality, whom he kept in priſon, ſhould be maſſacred the moment the breath was out of his body, in order that every conſiderable family in the kingdom might ſhed tears at his death; but that inhuman order was not executed.

HERODIAN, an eminent Greek hiſtorian, who ſpent the greateſt part of his life at Rome, flouriſhed in the third century, in the reigns of Severus, Caracalla, Heliogabalus, Alexander, and Maximin. His hiſtory begins from the death of Marcus Aurelius the philoſopher; and ends with the death of Balbinus and Maximin, and the beginning of the reign of Gordian. It is written in very elegant Greek; and there is an excellent tranſlation of it into Latin, by Angelus Politianus. Herodian has been publiſhed by Henry Stephens in 4to, in 1581; by Boecler, at Straſburg, in 1662, 8vo; and by Hudſon, at Oxford, in 1699, 8vo.

HERODIANS, a ſect among the Jews at the time of our Saviour; mentioned Math. xxii. 16. Mark iii. 6.

The critics and commentators are very much divided with regard to the Herodians. St Jerom, in his Dialogue againſt the Luciferians, takes the name to have been given to ſuch as owned Herod for the Meſſiah; and Tertulian and Epiphanius are of the ſame opinion. But the ſame Jerom, in his Comment on St Matthew, treats this opinion as ridiculous; and maintains, that the Phariſees gave this appellation by way of ridicule to Herod's ſoldiers who paid tribute to the Romans; agreeable to which the Syrian interpreters render the word by *the domeſtics of Herod*, i. e. "his courtiers."

courtiers." M. Simon, in his notes on the 22d chapter of Matthew, advances a more probable opinion. The name *Herodian* he imagines to have been given to ſuch as adhered to Herod's party and intereſt; and were for preſerving the government in his family, about which were great diviſions among the Jews.—F. Hardouin will have the Herodians and Sadducees to have been the ſame.—Dr Prideaux is of opinion that they derived their name from Herod the Great, and that they were diſtinguiſhed from the other Jews by their concurrence with Herod's ſcheme of ſubjecting himſelf and his dominions to the Romans, and likewiſe by complying with many of their heathen uſages and cuſtoms. This ſymbolizing with idolatry upon views of intereſt and worldly policy, was probably that leaven of Herod, againſt which our Saviour cautioned his diſciples. It is farther probable that they were chiefly of the ſect of Sadducees; becauſe the leaven of Herod is alſo denominated the leaven of the Sadducees.

HERODOTUS, an ancient Greek hiſtorian of Halicarnaſſus in Caria, ſon of Lyxus and Dryo, was born in the firſt year of the 74th Olympiad, that is, about 484 B. C. The city of Halicarnaſſus being at that time under the tyranny of Lygdamis grandſon of Artemiſia queen of Caria, Herodotus quitted his country and retired to Samos; from whence he travelled over Egypt, Greece, Italy, &c. and in his travels acquired the knowledge of the hiſtory and origin of many nations. He then began to digeſt the materials he had collected into order, and compoſed that hiſtory which has preſerved his name among men ever ſince. He wrote it in the iſle of Samos, according to the general opinion.—Lucian informs us, that when Herodotus left Caria to go into Greece, he began to conſider with himſelf,

> What he ſhould do to be for ever known
> And make the age to come his own,

in the moſt expeditious way, and with as little trouble as poſſible. His hiſtory, he preſumed, would eaſily procure him fame, and raiſe his name among the Grecians in whoſe favour it was written: but then he foreſaw that it would be very tedious to go through the ſeveral cities of Greece, and recite it to each reſpective city; to the Athenians, Corinthians, Argives, Lacedemonians, &c. He thought it moſt proper therefore to take the opportunity of their aſſembling all together; and accordingly recited his work at the Olympic games, which rendered him more famous than even thoſe who had obtained the prizes. None were ignorant of his name, nor was there a ſingle perſon in Greece who had not ſeen him at the Olympic games, or heard thoſe ſpeak of him who had ſeen him there.

His work is divided into nine books; which, according to the computation of Dionyſius Halicarnaſſenſis, contain the moſt remarkable occurrences within a period of 240 years; from the reign of Cyrus the firſt king of Perſia, to that of Xerxes when the hiſtorian was living. Theſe nine books are called after the names of the nine muſes, each book being diſtinguiſhed by the name of a muſe; and this has given birth to two diſquiſitions among the learned: 1. Whether they were ſo called by Herodotus himſelf; and, 2. For what reaſon they were ſo called. As to the firſt, it is generally agreed that Herodotus did not impoſe theſe names himſelf; but it is not agreed why they were impoſed by others. Lucian tells us, that theſe names were given them by the Grecians at the Olympic games, where they were firſt recited, as the beſt compliment that could be paid the man who had taken pains to do them ſo much honour.

There is aſcribed alſo to Herodotus, but falſely, a Life of Homer, which is uſually printed at the end of his work.—He wrote in the Ionic dialect, and his ſtyle and manner have ever been admired by all people of taſte. There have been ſeveral editions of the works of this hiſtorian; two by Henry Stephens, one in 1570, and the other in 1592; one by Gale at London in 1679; and one by Gronovius at Leyden in 1715, which is the laſt and beſt, though not the beſt printed.

HEROIC, ſomething belonging to a hero, or heroine. Thus we ſay, *heroic* actions, *heroic* virtue, *heroic* ſtyle, *heroic* verſe, *heroic* poet, *heroic* age, &c.

HEROIC *Age*, is that age or period of the world wherein the *heroes*, or thoſe called by the poets the *children of the gods*, are ſuppoſed to have lived.—The heroic age coincides with the fabulous age.

HEROIC *Poem* is that which undertakes to deſcribe ſome extraordinary action, or enterprize. Homer, Virgil, Statius, Lucan, Taſſo, Camoens, Milton, and Voltaire, have compoſed *heroic poems*. In this ſenſe, *heroic poem* coincides with *epic poem*.

HEROIC *Verſe*, is that wherein heroic poems are uſually compoſed; or, it is that proper for ſuch poems. In the Greek and Latin, hexameter verſes are peculiarly denominated *heroic verſes*, as being alone uſed by Homer, Virgil, &c. Alexandrine verſes, of 12 ſyllables, were formerly called *heroic verſes*, as being ſuppoſed the only verſe proper for heroic poetry; but later writers uſe verſes of ten ſyllables.

HEROINE, HEROINA, or *Herois*, a woman that has the qualities and virtues of a hero, or that has done ſome heroic action.

HERON, in ornithology. See ARDEA.

This bird is a very great devourer of fiſh, and will do more miſchief to a pond than even an otter. Some ſay that an heron will deſtroy more fiſh in a week than an otter will in three months; but that ſeems carrying the matter too far. People who have kept herons, have had the curioſity to number out the fiſh they fed them with into a tub of water; and counting them again afterwards, it has been found that a heron will eat 50 moderate-ſized dace and roaches in a day. It has been found that in carp-ponds viſited by this bird, one heron will eat up 1000 ſtore carp in a year, and will hunt them ſo cloſe that very few can eſcape. The readieſt method of deſtroying this miſchievous bird is by fiſhing for him in the manner of pike, with a baited hook. The bait conſiſting of ſmall roach or dace, and the hook faſtened to one end of a ſtrong line, made of ſilk and wire twiſted together. To the other end of the line is faſtened a ſtone of a pound weight; and ſeveral of theſe baited lines being ſunk by means of the ſtone in different parts of the pond, in a night or two the heron will not fail of being taken by one or other of them.

HERPES, in medicine, a bilious poſtule, which breaking out in different manners upon the ſkin, accordingly receives different denominations. See (the *Index* ſubjoined to) MEDICINE.

HERRERA TORDESILLAS (Anthony), a Spaniſh hiſtorian, was ſecretary to Veſpaſian Gonzara viceroy of Naples, and afterwards hiſtoriographer of the Indies, under king Philip II. who allowed him a conſiderable penſion. He wrote a general hiſtory of the Indies, in Spaniſh, from 1492 to 1554; and of the world (not ſo much eſteemed), from 1554 to 1598.—He died in 1625, aged about 66.

HERRERA (Ferdinand de), an eminent Spaniſh poet, of the 16th century, was born at Seville, and principally ſucceeded in the lyric kind. Beſides his poems, he wrote notes on Garcilaſſo de la Vega, and an account of the war of Cyprus; and the battle of Lepanto, &c.

HERRING, in ichthyology, a ſpecies of CLUPEA.

The name *herring* is derived from the German *heer*, an *army*, which expreſſes their number, when they migrate into our ſeas. Herrings are found in great plenty from the higheſt northern latitudes as low as the northern coaſts of France. They are alſo met with in vaſt ſhoals on the coaſt of America, as low as Carolina: they are found alſo in the ſea of Kamtſchatka, and poſſibly reach Japan: but the winter rendezvous is within the arctic circle, whether they retire after ſpawning, and where they are provided with plenty of inſect food. For an account of the remarkable migration of herrings, and the hiſtory of the fiſhery, &c. ſee CLUPEA and *Herring-FISHERY*.

They are in full roe at the end of June, and continue in perfection till the beginning of winter, when they begin to depoſite their ſpawn.

There are different names given to preſerved herrings, according to the different manners wherein they are ordered: as, 1. *Sea-ſticks*; which are ſuch as are caught all the fiſhing ſeaſon, and are but once packed. A barrel of theſe hold ſix or eight hundred; eight barrels go to the tun by law; a hundred of herrings is to be a hundred and twenty; a laſt is ten thouſand, and they commonly reckon fourteen barrels to the laſt.

3. There are others, repacked on ſhore, called *repacked herrings*; ſeventeen barrels of ſea-ſticks commonly make from twelve to fourteen of repacked herrings. The manner of repacking them is, to take out the herrings, waſh them out in their own pickle, and lay them orderly in a freſh barrel: theſe have no ſalt put to them, but are cloſe packed, and headed up by a ſworn cooper, with pickle, when the barrel is half full. The pickle is brine; ſo ſtrong as that the herring will ſwim in it.

3. *Summers*, are ſuch as the Dutch chaſers or divers catch from June to the 15th of July. Theſe are ſold away in ſea-ſtocks, to be ſpent preſently, in regard of their fatneſs; becauſe they will not endure repacking. They go one with another, full and ſhotten; but the repacked herrings are ſorted, the full herrings by themſelves.

4. The *ſhotten* and *ſick herrings* by themſelves; the barrel whereof is to be marked diſtinctly.

5. *Crux herrings*: which are ſuch as are caught after the 14th of September. Theſe are cured with that kind of ſalt called ſalt upon ſalt, and are carefully ſorted out, all full herrings, and uſed in the repacking.

6. *Corved herrings*. Theſe ſerve to make red herrings, being ſuch as are taken in the Yarmouth ſeas, from the end of Auguſt to the middle of October: provided they can be carried aſhore within a week, more or leſs, after they are taken. Theſe are never gipped, but rowed in ſalt, for the better preſerving of them, till they can be brought on ſhore; and ſuch as are kept to make *red herrings* are waſhed in great vats in freſh water before they are hung up in the *herring-hangs* or *red-herring* houſes.

As for the *manner of ſalting herrings*. The nets being haled on board, the fiſhes are taken out, and put into the warbacks, which ſtand on one ſide of the veſſel. When all the nets are thus unloaded, one fills the gippers baſkets. The gippers cut their throats, take out their guts, and fling out the full herrings into one baſket, and the ſhotten into another. One man takes the full baſket when they are gipped, and carries them to the tower back, wherein there is ſalt. One boy rows and ſtirs them about in the ſalt, and another takes them, thus rowed, and carries them in baſkets to the packers. Four men pack the herrings into one barrel, and lay them one by one, ſtraight and even; and another man, when the barrel is full, takes it from the packers. It is left to ſtand a day, or more, open to ſettle, that the ſalt may melt and diſſolve to pickle; after which it is filled up, and the barrel headed. The pickle is to be ſtrong enough to ſuſtain a herring; otherwiſe the fiſh decay in it. See *Herring-FISHERY*.

HERRING (Thomas), archbiſhop of Canterbury, was the ſon of the rev. Mr John Herring, rector of Walſoken in Norfolk, where he was born in 1693. He was educated at Jeſus-college, Cambridge; was afterwards choſen fellow of Corpus Chriſti college, and continued a tutor there upwards of ſeven years. Having entered into prieſt's orders in 1719, he was ſucceſſively miniſter of Great Shelford, Stow cum Qui, and Trinity in Cambridge; chaplain to Dr Fleetwood, biſhop of Ely; rector of Rettingdon in Eſſex, and of Barly in Hertfordſhire; preacher to the Society of Lincoln's Inn, chaplain in ordinary to his late majeſty, rector of Bleechingly in Surry, and dean of Rocheſter. In 1737 he was conſecrated biſhop of Bangor, and in 1743 tranſlated to the archiepiſcopal ſee of York. On the death of Dr Potter in 1747, he was tranſlated to the ſee of Canterbury; but in 1753 he was ſeized with a violent fever, which brought him to the brink of the grave; and after languiſhing about four years, he died on the 13th of March 1757. He expended upwards of ſix thouſand pounds in repairing and adorning the palaces of Croydon and Lambeth. This worthy prelate, in a moſt eminent degree, poſſeſſed the virtues of public life; his mind was filled with unaffected piety and benevolence, he was an excellent preacher, and a true friend to civil and religious liberty. After his death was publiſhed a volume of his ſermons on public occaſions.

HERRNHUT, or **HERRNHUTH**, the firſt and moſt conſiderable ſettlement of the United Brethren, commonly called Moravians, ſituated in Upper Luſatia, upon an eſtate belonging to the family of Nicholas Lewis, count Zinzendorf, about 50 miles eaſt of Dreſden. See the article UNITED BRETHREN.

The building of this place was begun in 1727, by ſome emigrants from Moravia, who forſook their poſſeſſions on account of the perſecution they ſuffered, as Proteſtants, from the Roman Catholics; and being well received by count Zinzendorf, cleared a ſpot of ground allotted to them by him upon the riſe of an hill

Herrnhut.

Herrnhut.

called the Hutberg, or Watch-hill, from which they took occaſion to call the new ſettlement HERRNHUT, or the Watch of the Lord.—More emigrants taking refuge with them, and many other perſons joining their congregations, the buildings increaſed conſiderably; and at preſent Herrnhut is a regular and well-built village, containing about 1300 inhabitants, all members of the Church of the United Brethren.—Beſides the miniſter and his aſſiſtants, a warden is appointed, who preſides in the veſtry, and ſuperintends the temporary concerns of the ſettlement. The Brethren diſtinguiſh themſelves by a plain and uniform dreſs, the women having retained the dreſs of the countries from which the firſt emigrants proceeded, not from any ſuperſtitious attachment to old forms, but from a deſire to preclude vanity and uſeleſs expence.—As moſt of the ſettlements of this community reſemble each other, both in the diſpoſition of their buildings, and in their internal regulations, we will give a ſhort ſketch of Herrnhut, as the pattern from which the reſt were copied, though there are others in which the buildings are more regularly planned.—The chapel, which is ſituated in a large ſquare, is a ſpacious and neat building, furniſhed with a good organ, and moveable forms, but no pews. The men ſit on one ſide, and the women on the other, entering at ſeparate doors. Beſides the uſual Sunday's ſervice, the congregation meets here every evening, and the children every morning. The dwellings of the miniſter and warden of the congregation form one, and a ſchool-houſe the other, wing to the chapel. From the chapel, an avenue of trees leads to the burying-ground, which is a large ſquare field on the declivity of the Hutberg, and at ſome diſtance from the village. Several walks, bordered by trees, and furniſhed with ſeats, ſurround and interſect it. The grave-ſtones and graves are all of equal ſize, and placed in regular rows; only the vault of Count Zinzendorf, as lord of the manor, is larger than the reſt. Burials are performed with great ſolemnity, but no mourning dreſſes uſed.

On one ſide of the ſquare, in which the chapel ſtands, is a large building, inhabited by the ſingle men, with work-ſhops, out-houſes, and gardens, excluſive of the dwelling rooms. The main building contains a neat chapel, in which a ſhort morning and evening ſervice is performed for the inhabitants; a dining-hall; and a dormitory, in which each has a ſeparate bed. The latter is a lofty room, furniſhed with large windows and ventilators, ſo as to admit and preſerve a pure air. For the ſick apartments are allotted, and ſick waiters appointed. The number of inhabitants in one room is proportioned to its ſize, but there are many who have rooms to themſelves. No one lives here by compulſion, each inhabitant pays for rent and board a moderate ſum, fixed by a committee of overſeers in which the warden of the houſe preſides; whoſe buſineſs it is to maintain good order, attend to the external welfare of the houſe and its inhabitants, and by his advice and activity, to prevent every evil ariſing from external ſources. Beſides the warden an unmarried clergyman reſides in the houſe, appointed to attend to the moral conduct and ſpiritual concerns of all the ſingle men belonging to the congregation. He hears their complaints, aſſiſts them with good advice, and uſes all his influence for their benefit, and for the prevention of any evil that would undermine their ſpiritual happineſs. On the other ſide of the ſquare is another large building, inhabited by ſingle women; with a chapel, dining-hall, dormitory, and a large garden. The internal regulations are exactly the ſame with thoſe of the houſe of the ſingle men. There are likewiſe houſes for widowers and widows, who find in them an agreeable retreat, with board and lodging. The poor are cared for and maintained; for which purpoſe, ſeveral charitable inſtitutions exiſt in the congregation. The manor-houſe, the houſe of count Reuſs, the ſhop and linen warehouſe, are the moſt conſiderable buildings in Herrnhut; the family houſes are built in regular ſtreets opening into the ſquare. Both the ſtreets and houſes are kept clean; and beſides a watchman at night, an officer is appointed to attend to good order in the day. All ſtrangers are treated with civility; but neither drunken nor diſorderly viſitors, nor beggars, are ſuffered to infeſt the ſtreets. The latter receive an alms, and are then deſired to proceed. The principal trade carried on at Herrnhut is in linen; beſides which, the work done there by taylors, glovers, ſhoemakers, cabinet-makers, ſilverſmiths, and other artificers, is well known for its good quality. They have their firſt prices, and never make any abatement. Every workman receives his wages, no community of goods exiſting among the brethren, as is falſely ſuppoſed; and the contributions towards the ſupport of the eſtabliſhment at large, the miſſions, and other charitable inſtitutions are voluntary. The building and increaſe of this ſettlement occaſioned no ſmall ſurpriſe in the adjacent country, and both in 1732, 1736, and 1737, commiſſioners were appointed to examine into the doctrines and proceedings of the Brethren at Herrnhut. The commiſſioners made a favourable report; and ever ſince both Herrnhut, and other ſettlements of the United Brethren in Saxony have been protected, and ſeveral immunities offered them by the court, but not accepted. Herrnhut was viſited in 1766 by the late emperor, Joſeph II. after his return from Dreſden, by the preſent king of Pruſſia, and by ſeveral royal perſonages, who expreſſed their ſatisfaction in examining its peculiar regulations. The United Brethren have ſettlements in Saxony, Sileſia, and other parts of Germany, in Holland, Denmark, England, Ireland, and America. In England, their principal ſettlements are at Fulnec near Leeds, and Fairfield near Mancheſter. In Greenland, North and South America, the Weſt Indies, and Ruſſia, they have miſſions for the propagation of Chriſtianity among the Heathen, and in many parts have had conſiderable ſucceſs. See Buſching's account of the riſe and progreſs of the Church of the Brethren, Halle 1781. Crantz's Hiſtory of the Brethren, London 1780.

HERRNHUT (New), the firſt miſſion ſettlement of the United Brethren in the iſland of St Thomas in the Weſt Indies, under the Daniſh government, begun in the year 1739 their miſſionaries having endeavoured to propagate Chriſtianity among the negro ſlaves ever ſince 1731; and ſuffered many hardſhips and perſecutions, from which there converts were not exempted. Many of the planters finding in proceſs of time, that the Chriſtian ſlaves were more tractable, moral, and induſtrious than the heathen, not only countenanced but encouraged their endeavours. Theſe were alſo greatly facilitated by the protection of the king of Denmark, Chriſtian VI. The ſettlement conſiſts of a ſpacious negro church, a dwelling-houſe for the miſſionaries, negro huts, out-houſes, and gardens. From this place the iſland of St Croix and St Jan, were firſt ſupplied with miſſionaries; and the Brethren have now two ſettlements in each. The negro converts belonging to their church amount in thoſe three iſlands to near 8000 ſouls.

Herrnhut (New), is alſo the name of the oldeſt miſſion ſettlement of the United Brethren, in Greenland. It is ſituated on Ball's river, a few miles from the ſea, near Davis's ſtraights, on the weſtern coaſt of Greenland, not far from the Daniſh colony Godhaab. The two firſt miſſionaries were ſent from Herrnhut in the year 1733, and their laudable intentions favoured by Chriſtian VI. king of Denmark. They had to ſtruggle in this uncultivated, frozen, and ſavage country with inconceivable hardſhips, and found at firſt great difficulty in acquiring the language of the natives. However, after ſix years labour and perſeverance, they had the ſatisfaction to baptize four perſons, all of one family; and from that time the miſſion began to proſper, ſo that in the ſucceeding years two other ſettlements were begun, called Lichtenfels and Lichtenau: all of them continue in proſperity. About 1300 of the natives have been chriſtianized ſince the beginning of this miſſion. See *Crantz's Hiſtory of Greenland*, London, 1777.

HERSE, in fortification, a lattice, or portcullis, in form of an harrow, beſet with iron ſpikes. The word *herſe* is French, and literally ſignifies "harrow;" being formed of the Latin *herpex* or *irpex*, which denotes the ſame.

It is uſually hung by a rope faſtened to a moulinet; to be cut, in caſe of ſurpriſe, or when the firſt gate is broken with a petard, that the herſe may fall and ſtop up the paſſage of the gate or other entrance of a fortreſs.

The herſe is otherwiſe called a *ſarraſin*, or *cataract*; and when it conſiſts of ſtraight ſtakes, without any croſs pieces, it is called *orgues*.

Herse, is alſo a harrow, which the beſieged, for want of chevaux de friſe, lay in the way, or in breaches, with the points up, to incommode the march as well of the horſe as of the infantry.

HERSILLON, in the military art, a ſort of plank or beam, ten or twelve feet long, whoſe two ſides are drove full of ſpikes or nails, to incommode the march of the infantry or cavalry. The word is a diminutive of *herſe*; the herſillon doing the office of a little herſe. See Herse.

HERTFORD. See Hartford.

HERTHA, or Herthus, in mythology, a deity worſhipped by the ancient Germans. This is mentioned by Tacitus, in his book *De Moribus Germanorum*, cap. 40. Voſſius conjectures, that this goddeſs was Cybele, but ſhe was more probably Terra or the Earth; becauſe the Germans ſtill uſe the word *hert* for the earth, whence alſo the Engliſh *earth*. Some have ſuppoſed that Stonehenge was a temple conſecrated to the goddeſs Herta.

HERTZBERG, a conſiderable town of Germany, in the electorate of Saxony, and on the confines of Luſatia. E. Long. 13. 37. N. Lat. 51. 42.

HERVEY (James), a late divine of exemplary piety, was born in 1714, and ſucceeded his father in the livings of Weſton Flavell and Collingtree in Northamptonſhire. Theſe being within five miles of each other, he attended alternately with his curate; till being confined by his ill health, he reſided conſtantly at Weſton; where he diligently purſued the labours of the miniſtry and his ſtudy under the diſadvantage of a weak conſtitution. He was remarkably charitable; and deſired to die juſt even with the world, and to be, as he termed it, his own executor. This excellent divine died on Chriſtmas-day 1758, leaving the little he poſſeſſed to buy warm clothing for the poor in that ſevere ſeaſon.—No work is more generally or deſervedly known than his *Meditations and Contemplations*: containing Meditations among the Tombs, Reflections on a Flower-garden, a Deſcant on Creation, Contemplations on the Night and ſtarry Heavens, and a Winter-piece. The ſublime ſentiments in theſe pieces have the peculiar advantage of being conveyed in a flowing elegant language, and they have accordingly gone thro' many editions. He publiſhed beſides, *Remarks on Lord Bolingbroke's Letters on Hiſtory*; *Theron and Aſpaſio, or a Series of Dialogues and Letters on the moſt important Subjects*; ſome ſermons, and other tracts.

Hervey-Iſland, one of the South-Sea iſlands, diſcovered by Captain Cook, September 23. 1773, who gave it that name in honour of the earl of Briſtol. It is a low iſland, ſituated in W. Long. 158. 54. S. Lat. 19. 8.

HESBON, Esebon, or *Heſebon* (anc. geog.), the royal city of the Amorites, in the tribe of Reuben, according to Moſes: Though in Joſhua xxi. 39. where it is reckoned among the Levitical cities, it is put in the tribe of Gad; which argues its ſituation to be on the confines of both.

HESIOD, a very ancient Greek poet; but whether cotemporary with Homer, or a little older or younger than he, is not yet agreed among the learned; nor is there light enough in antiquity to ſettle the matter exactly. His father, as he tells us in his *Opera et dies*, was an inhabitant of Cuma, one of the Eolian iſles, now called *Taio Nova*; and removed from thence to Aſcra, a little village of Bœotia, at the foot of mount Helicon, where Heſiod was probably born, and called, as he often is, *Aſcræus*, from it. Of what quality his father was, is nowhere ſaid; but that he was driven by his misfortunes from Cumæ to Aſcra, Heſiod himſelf informs us. His father ſeems to have proſpered better at Aſcra than he did in his own country; yet Heſiod could arrive at no higher fortune than keeping ſheep at the top of mount Helicon. Here the muſes met with him, and entered him into their ſervice:

> Erewhile as they the ſhepherd ſwain behold,
> Feeding beneath the ſacred mount his fold,
> With love of charming ſong his breaſt they fir'd,
> There me the heav'nly muſes firſt inſpir'd;
> There, when the maids of Jove the ſilence broke,
> To Heſiod thus, the ſhepherd ſwain, they ſpoke, &c.

To this account, which is to be found in the beginning of his *Generatio Deorum*, Ovid alludes in theſe two lines:

> *Nec mihi ſunt viſi Clio, Cliuſque ſorores,*
> *Servanti pecudes vallibus, Aſcra, tuis.*
> Nor Clio nor her ſiſters have I ſeen,
> As Heſiod ſaw them in the Aſcræan green.

On the death of the father, an eſtate was left, which ought to have been equally divided between the two brothers Heſiod and Perſes; but Perſes defrauded him in the diviſion, by corrupting the judges. Heſiod was ſo far from reſenting this injuſtice, that he expreſſes a concern for thoſe miſtaken mortals who place their happineſs in riches only, even at the expence of their virtue. He lets us know, that he was not only above want, but capable of aſſiſting his brother in time of need; which he often did though he had been ſo ill uſed by him. The laſt circumſtance he mentions relating to himſelf is his conqueſt in a poetical contention. Archidamus, king of Eubœa had inſtituted funeral games in honour of his own memory, which his ſons afterwards took care to have performed. Here Heſiod was a competitor for the prize in poetry; and won a tripod, which he conſecrated to the muſes. Heſiod having entered himſelf in the ſervice of the muſes, left off the paſtoral life, and applied himſelf to the ſtudy of arts and learning. When he was grown old, for it is agreed by all that he lived to a very great age, he removed to Locris, a town about the ſame diſtance from mount Parnaſſus as Aſcra was from Helicon. His death was tragical. The man with whom he lived at Locris, a Mileſian born, raviſhed a maid in the ſame houſe; and though Heſiod was entirely ignorant of the fact, yet being maliciouſly accuſed to her brothers as an accomplice, he was injuriouſly ſlain with the raviſher, and thrown into the ſea. The *Theogony*, and *Works and days*, are the only undoubted pieces of this poet now extant: though it is ſuppoſed that theſe poems have not deſcended perfect and finiſhed to the preſent time. A good edition of Heſiod's works was publiſhed by Mr Le Clerc at Amſterdam in 1701.

HESPER, Hesperus, in aſtronomy, the evening ſtar; an appellation given to Venus when ſhe follows or ſets after the ſun. The word is formed of the Greek Εσπερος; and is ſuppoſed to have been originally the proper name of a man, brother of Atlas, and father of the Heſperides.

Diodorus, lib. iii. relates, that Heſperus having aſcended to the top of mount Atlas, the better to obſerve and contemplate the ſtars, never returned more; and that hence he was fabled to have been changed into this ſtar.

HESPERIA, an ancient name of Italy; ſo called by the Greeks from its weſtern ſituation. *Heſperia* was alſo an appellation of Spain; but with the epithet *ultima* (Horace), to diſtinguiſh it from Italy, which is called *Heſperia magna* (Virgil), from its extent of empire.

HESPERI cornu, called the *Great Bay* by the author of Hanno's Periplus: but moſt interpreters, following Mela, underſtand a promontory; ſome Cape Verd, others Palmas Cape: Voſſius takes it to be the former, ſince Hanno did not proceed ſo far as the latter cape.

HESPERIDÆ, in botany, (from the *Heſperides*) *golden* or *precious fruit*: the name of the 19th order in Linnæus's Fragments of a Natural Method. See Botany, p. 461.

HESPERIDES, in the ancient mythology, were the daughters of Heſper or Heſperus, the brother of Atlas. According to Diodorus, Heſperus and Atlas two brothers, who poſſeſſed great riches in the weſtern parts of Africa. Heſperus had a daughter called Heſperia, who married her uncle Atlas, and from this marriage proceeded ſeven daughters, called *Heſperides* from the name of their mother, and *Atlantides* from that of their father. According to the poets, the *Heſperides* were three in number, Ægle, Arethuſa, and Heſperthuſa. Heſiod, in his Theogony, makes them the daughters of *Nox, Night*, and ſeats them in the ſame place with the Gorgons; *viz.* at the extremities of the weſt, near mount Atlas; it is on that account he makes them the daughters of Night, becauſe the ſun ſets there. The Heſperides are repreſented by the ancients as having the keeping of certain golden apples, on the other ſide the ocean. And the poets give them a dragon to watch the garden where the fruit grows: this dragon they tell us Hercules ſlew, and carried off the apples.—Pliny and Solinus will have the dragon to be no other than an arm of the ſea, wherewith the garden was encompaſſed, and which defended the entrance thereof. And Varro ſuppoſes, that the golden apples were nothing but ſheep. Others, with more probability, ſay they were oranges.

The gardens of the Hesperides are placed by ſome authors at Larach, a city of Fez; by others, at Bernich, a city of Barca, which tallies better with the fable. Others take the province of Suſa in Morocco for the iſland wherein the garden was ſeated. And, laſtly, Rudbecks places the Fortunate Iſlands, and the gardens of the Heſperides, in his own country, Sweden.

HESPERIDUM insulæ (anc. geog.), iſlands near the Heſperi Cornu; but the accounts of them are ſo much involved in fable, that nothing certain can be affirmed of them.

HESPERIS, rocket, *Dame's Violet*, or *queen's gilliflower*: A genus of the ſiliquoſa order, belonging to the tetradynamia claſs of plants; and in the natural method ranking under the 39th order, *Siliquoſæ*. The petals are turned obliquely; there is a glandule within the ſhorter ſtamina; the ſiliqua almoſt upright; the ſtigma forked at the baſe, connivent, or cloſing at the top: the calyx cloſe.

Species 1. The matronalis, or common ſweet ſcented garden-rocket, hath fibrous roots, crowned with a tuft of long, ſpear ſhaped, rough leaves; upright, ſingle, hairy ſtalks two feet high; garniſhed with oval, lanceolate, ſlightly indented, cloſe-ſitting leaves; and the ſtalk and branches terminated by large and long ſpikes of ſweet-ſcented flowers of different colours and properties in the varieties, of which there are a great number. All the varieties of this ſpecies are ſo remarkable for imparting a fragrant odour, that the ladies were fond of having them in their apartments. Hence they derived the name of *dame's violet*; and, bearing ſome reſemblance to a ſtock-gilliflower, were ſometimes alſo called *queen's-gilliflower*; but are now moſt commonly called *rocket*. 2. The inodora, or ſcentleſs rocket, hath a fibrous root; upright, round, firm ſtalks, two feet high, garniſhed with ſpear-ſhaped, acute-pointed, ſharply indented, cloſe-ſitting, leaves; and all the branches terminated by large ſpikes of ſcentleſs flowers, with obtuſe petals, of different colours and properties in the varieties. This ſpecies makes a fine appearance, but hath no ſcent. 3. The triſtis, or dull-flowered night-ſmelling rocket, hath fibrous roots; upright, branching, ſpreading, briſtly ſtalks, two feet high; ſpear-ſhaped pointed leaves; and ſpikes of pale purple flowers, of great fragrancy in the evening.

Culture. All the ſpecies are hardy, eſpecially the firſt and ſecond, which proſper in any of the open borders, and any common garden-ſoil; but the third, being rather impatient of a ſevere froſt, and of much moiſture in winter, ſhould have a dry warm ſituation, and a few may be placed in pots to be ſheltered in caſe of inclement weather. They may be propagated either by ſeeds, by offsets, or by cuttings of the ſtalks.

HESPERUS, in fabulous hiſtory, ſon of Cephalus by Aurora, as fair as Venus, was changed into a ſtar, called *Lucifer* in the morning, and *Heſperus* in the evening. See HESPER.

HESSE, a country of Germany, in the circle of the Upper Rhine; bounded on the ſouth by the biſhopric of Fulda; on the eaſt by the principality of Hersfeld, Thuringia, and Eichsfeld, as alſo by that of Calenburg; on the north-ſide by the biſhopric of Paderborn and Waldek, the duchy of Weſtphalia, and the county of Witgenſtein; and on the weſt by Naſſau-Dillenburg, the county of Solins, and Upper-Iſenburg. In the above limits, the county of Katzenellnbogen and ſome other territories are not included. The whole country, in its utmoſt length, is near 100 miles, and in ſome places near as much in breadth. The air is cold, but wholeſome; and the ſoil fruitful in corn, wine, wood, and paſture. The country abounds alſo in cattle, fiſh, and game; ſalt-ſprings, baths, and mineral waters. The hills, which are many, yield ſilver, copper, lead, iron, alum, vitriol, pit-coal, ſulphur, boles, a porcelain earth, marble, and alabaſter. In the Eder gold is ſometimes found; and at Frankenberg a gold mine was formerly wrought. Beſides many leſſer ſtreams, Heſſe is watered by the following rivers, *viz.* the Laen, the Fulda, the Eder or Schwalm, the Weroa or Weſer, and Diemel. The Rhine alſo and the Mayne paſs through the country of Katzenellnbogen. This country, like moſt others in Germany, has its ſtate, conſiſting of the *prelates*, as they are called, the nobility, and the towns. The diets are divided into general and particular, and the latter into the greater and ſmaller committees. The houſe of Heſſe is divided into two principal branches, *viz.* Caſſel and Darmſtadt, of which Philipſdale Rhinfeldts, and Homburg, are collateral branches; the two firſt of Heſſe-Caſſel, and the laſt of Heſſe-Darmſtadt. Their rights and privileges are very conſiderable. In particular, they have ſeveral votes at the diets of the empire; and cauſes, not exceeding 1000 florins, are determined by the courts of the country, without appeal. The princes of Heſſe-Caſſel are not of age till they are 25, but thoſe of Heſſe-Darmſtadt are ſo at 18. The right of primogeniture hath been eſtabliſhed in both houſes. The revenues of Darmſtadt are ſaid to amount to near 100,000l. a-year, and thoſe of Heſſe-Caſſel to near 200,000l. The ſmall county of Schaumberg alone yields a revenue of 10,000l. and that of Katzenellnbogen, with the foreſts of Richardſwalde, it is ſaid, was farmed near 200 years ago at 12,000l. The prince of Heſſe-Caſſel has 40 or 50,000 men in his dominions fit to bear arms; and the troops that he hires out have often brought him in large ſums, eſpecially from Great Britain. He keeps a ſtanding army of 15,000 men. This family is allied to moſt if not all the Proteſtant princes in Europe. The branches of Caſſel, Homburg, and Philipſdale, are Calviniſts; that of Darmſtadt, Lutherans; and that of Rhinfeldts, Roman Catholics. The preſent prince of Heſſe-Caſſel, indeed, in the year 1749, embraced the Roman Catholic religion; but in 1754 drew up, and confirmed by oath, an inſtrument, of which all the Proteſtant princes are guarantees, declaring that the eſtabliſhed religion of his dominions ſhould continue in every reſpect as before, and that his children ſhould be brought up and inſtructed therein. Here, as in the other Proteſtant Lutheran countries of Germany, are conſiſtories, ſuperintendants, and inſpectors of the church. In the whole langraviate are three univerſities, beſides Latin ſchools and gymnaſia, for the education of youth. The manufactures of Heſſe are linen cloth, hats, ſtockings, gloves, paper, goldſmiths wares; and at Caſſel a beautiful porcelain is made. They have alſo the fineſt wool in Germany; but are reproached with want of induſtry, in exporting inſtead of manufacturing it themſelves.—This is ſuppoſed to have been the country of the ancient Catti, mentioned by Tacitus, &c. who, in after-ages, were called *Chatti*, *Chaſſi*, *Haſſi*, and *Heſſi*. The two chief branches of Caſſel and Darmſtadt have many rights and privileges in common, which we have not room to ſpecify. Both of them have a ſeat and vote in the college of princes at the diet of the empire, and thoſe of this circle. Each of theſe princes, beſides their guards and militia, maintains a conſiderable body both of horſe and foot.

HESSIAN FLY, a very miſchievous inſect which lately made its appearance in N. America; whoſe depredations have materially injured the crops of wheat. It is, in its perfect ſtate, a ſmall winged inſect; but the miſchief it does is while in the form of a caterpillar; and the difficulty of deſtroying it is increaſed by its being as yet unknown where it depoſits its eggs, to be hatched before the firſt appearance of the caterpillars. Theſe miſchievous inſects begin their depredations in autumn, as ſoon as the wheat begins to ſhoot up through the ground. They devour the tender leaf and ſtem with great voracity, and continue to do ſo till ſtopped by the froſt; but no ſooner is this obſtacle removed by the warmth of the ſpring, but the fly appears again, laying its eggs now, as has been ſuppoſed, upon the ſtems of the wheat juſt beginning to ſpire. The caterpillars, hatched from theſe eggs, perforate the ſtems of the remaining plants at the joints, and lodge themſelves in the hollow within the corn, which ſhows no ſign of diſeaſe till the ear begins to turn heavy. The ſtems then break; and being no longer able to perform their office in ſupporting and ſupplying the ears with nouriſhment, the grain periſhes about the time that it goes into a milky ſtate. Theſe inſects attack alſo rye, barley and timothy-graſs, though they ſeem to prefer wheat. The deſtruction occaſioned by them is deſcribed in the American Muſeum for February 1787, is in the following words: "It is well known that all the crops of wheat in all the land over which it has extended, have fallen before it, and that the farmers beyond it dread its approach; the proſpect is, that unleſs means are diſcovered to prevent its progreſs, the whole continent will be over-run;—a calamity more to be dreaded than the ravages of war."

This terrible inſect appeared firſt in Long Iſland during the American war, and was ſuppoſed to have been brought from Germany by the Heſſians; whence it had the name of the *Heſſian fly*. From thence it has proceeded inland at the rate of about 15 or 20 miles annually; and by the year 1789 had reached 200 miles from the place where it was firſt obſerved. At that time it continued to proceed with unabating increaſe; being apparently ſtopped neither by rivers nor mountains. In the fly ſtate it is likewiſe exceedingly troubleſome; by getting into houſes in ſwarms, falling into victuals and drink; filling the windows, and flying perpetually into the candles. It ſtill continued to infeſt Long Iſland as much as ever; and in many places the culture of wheat was entirely abandoned.

The American States are likewiſe infeſted with another miſchievous inſect, named the *Virginian-wheat-fly*. This, however, has not yet paſſed the river Delaware; though there is danger of its being gradually inured to colder climates ſo as to extend its depredations to the northern States alſo. But it is by no means the ſame with the Heſſian fly. The wheat-fly is the ſame with that whoſe ravages in the Angumois in France are recorded by M. du Hamel; it eats the grain, and is a moth in its perfect ſtate. On the other hand, the Heſſian fly has been hitherto unknown to naturaliſts; it eats only the leaf and ſtalk; and, in its perfect ſtate, is probably a tenthredo, like the black negro-fly of the turnip.

As of late years great quantities of wheat were exported from America into Britain, it became an object worthy of the attention of government to conſider how far it was proper to allow of ſuch importation, leſt this deſtructive inſect might be brought along with the grain. The matter, therefore was fully canvaſſed before the privy council; and the following is the ſubſtance of the information relative to it; and in conſequence of this, the importation of American wheat was forbidden by proclamation.

1. By a letter, dated 22d April 1788, Mr Bond, conſul at Philadelphia, informed the marquis of Caermarthen, that there was a deſign to export wheat from thence to England; that the fly had made great depredations; and that there might be danger of its thus being conveyed acroſs the Atlantic. He added, that it was not known where the eggs of the inſect were depoſited, though it was ſuppoſed to be in the grain. Steeping the ſeed in elder juice he recommended as an effectual remedy and preſervative of the crop.

2. In conſequence of this information his Lordſhip wrote to Sir Joſeph Banks, preſident of the royal ſociety, deſiring him to enquire as much as poſſible concerning the inſect, both with regard to its natural hiſtory, and the method of preventing its ravages. In this reſearch, however, that learned gentleman miſtook the inſect called the *flying weevil* for the *Heſſian-fly*. Of this inſect he gives a deſcription *; but in a little time, being ſenſible of his miſtake, he obſerved to the council, that his report to the marquis of Caermarthen applied not to the Heſſian fly, but to a different inſect, viz. the *flying weevil*; that the danger of importing this inſect was much greater then that of the Heſſian fly. The corn already brought from America, he was of opinion, might eaſily be examined and a diſcovery made whether the fly had been there. Among other methods which might be uſed for this purpoſe, that of putting the corn among water was one, when the infected grains would riſe to the top, and might then be opened and examined. Some ſlight trials of that kind he had already made; and found manifeſt ſigns of the fly in ſome grains which he had opened.

3. A farther account of the inſect was given by Dr Mitchel, in conſequence of the abovementioned letter from the marquis of Caermarthen. According to him it was firſt diſcovered in the year 1776, on Staten Iſland, and the weſt end of Long Iſland; ſince that time it proceeded regularly through the ſouthern diſtrict of the ſtate of New York, part of Connecticut; and at the time of giving the account, July 1788, had got into New Jerſey. As it appeared about the time that the Heſſian troops arrived, an opinion had gone abroad that they brought it along with them; but the Doctor was of opinion that it is a native animal, nouriſhed by ſome indigenous plant, but which then, for the firſt time, came among the wheat, and found it proper food. He had ſeen the caterpillar, chryſalis, and fly, but never could find the egg, or diſcover where it is depoſited. The caterpillar appears, as has already been ſaid, in autumn, and, after having devoured the tender ſtalk, ſoon becomes a chryſalis, coloured like a flax-ſeed; which, being fixed between the leaf and the ſtalk, injures the plant by its mechanical preſſure: from this proceeds the fly, which is either able of itſelf to ſuſtain the intenſe winter froſts, or lays eggs capable of doing it. Early in the ſpring the caterpillar appears again, even when the heat is ſcarce ſufficient to make the wheat grow; its ravages, therefore, are at this period particularly deſtructive; and it paſſes through its metamorphoſes with ſuch ſpeed, as to produce a third generation while the wheat is yet tender and juicy; however, as the corn has by this time grown conſiderably, the third generation is not ſo deſtructive as the ſecond. It hurts chiefly by rendering the ſtraw weak, and liable to break down when loaded afterwards by the weight of a full ear; "and ſometimes (ſays the Doctor) it will be infeſted by the fourth ſwarm before harveſt."

4. In another communication of Sir Joſeph Banks, dated July 24. 1778, he makes ſome general obſervations on the nature of thoſe caterpillars from which flying inſects proceed; and to which claſs both the flying weevil and Heſſian fly belong. Nature, he obſerves, has provided againſt the kinds of danger theſe tender inſects are moſt likely to meet with. Thus, in climates where the winters are ſevere, the eggs of the moſt tender inſects reſiſt the force of the uſual froſt; in ſeaſons of remarkable ſeverity, indeed, ſome are deſtroyed; but a ſufficient number always eſcape for propagating the ſpecies. The young caterpillar, if hatched before its proper food be ready, will ſurvive even weeks before it periſhes for want of nouriſhment; and in ſome few inſtances where it is hatched in the autumn, it is directed by inſtinct to ſpin a web, in which it remains torpid and without food during the whole

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* See *Weevil*.

Heſſian Fly.

winter. The chryſalis, though deprived of loco-motion, is capable of reſiſting various dangers ariſing from cold, heat, wet, &c. and the length of time which the animal remains in that ſtate is capable of very conſiderable extenſion. The complete animal, tender as it appears, and intended to exiſt no longer than is neceſſary to fulfil the buſineſs of propagation, which, in ſome ſpecies is gone through in a few days, nevertheleſs is capable, in ſome inſtances, of enduring the utmoſt variation of climate; and if, by accidental circumſtances, the ſexes are prevented from meeting, its ſhort life is extended to many times the amount of its uſual duration.

The obſervations on the fly made by Sir Joſeph in this paper, are not different from thoſe already related; only he diſſents from the opinion of Mr Bond, that the eggs are laid on the grain; thinking it more probable from analogy, that they are depoſited on the ſtraw; and being ſhaken off from thence by the ſtrokes of the flail in threſhing, are mixed with the corn; from whence it muſt be very difficult to ſeparate them. Hence he concluded, that there was an apparent and very great riſk of importing the eggs along with the corn; and there was no doubt, that when once they had got a footing, they would eſtabliſh themſelves in Britain as well as in America. It muſt be obſerved, however, that none of the grain which was examined ſhowed any ſigns of this fly, its eggs, or caterpillars; ſuch inſects as were found in ſome deceaſed ſpecimens being only the weevils common in England as well as in other countries; though ſome which were inſpected in the month of Auguſt this year contained the chryſalis of ſome inſects, which Sir Joſeph Banks was of opinion might be the flying weevil; and as he did not know whether theſe would revive or not, he gave it as his opinion, that the cargo in which they were found ought not to be ſuffered to come into the kingdom.

5. In order to procure all the intelligence that could be had concerning theſe inſects, the duke of Dorſet addreſſed a letter to the royal ſociety of agriculture in France, to know whether any of them exiſt in that country. The report of the ſociety was accompanied with a drawing of two inſects; one of which was ſuppoſed to be the caterpillar of the Heſſian fly, from its attacking the wheat only when in the herb; beginning its ravages in autumn, reappearing in the ſpring, and undergoing the metamorphoſis already mentioned. "That inſect (ſay the ſociety) whoſe havoc has been well known in America only ſince 1776, does not appear to differ from it, as well as we can judge from a very ſhort deſcription of thoſe which have been obſerved in the north, and of which the hiſtory is contained in the different volumes of the academy of ſciences of Stockholm. We know that there exiſt in France caterpillars whoſe manner of living reſembles that of thoſe inſects; but the miſchief which they do to corn having never been conſiderable enough to attract the attention of government, and not having been ourſelves engaged in following in detail the hiſtory of that ſpecies of caterpillar, we regret not being able to ſay any thing particular upon that ſubject." The reſt of the report contains an account of the flying weevil.

6. Further recourſe was now had to America for information. The marquis of Caermarthen wrote to Sir John Temple at New York, the Britiſh conſul general; and this gentleman applied to colonel Morgan who had been more curious with reſpect to this inſect than any other perſon with whom he was acquainted. His account was, that the Heſſian fly was firſt introduced into America by means of ſome ſtraw made uſe of in package, or otherwiſe landed on Long Iſland at an early period of the late war; and its firſt appearance was in the neighbourhood of Sir Wiliim Howe's debarkation, and at Flat Buſh. From thence it ſpread in every direction, but at firſt very ſlowly; and it was not till the year 1786 that they reached Mr Morgan's farm, ſituated not quite 50 miles from New York. No damage was done the firſt ſeaſon, and very little the ſecond; but in 1788 they were materially damaged, and in ſome places totally deſtroyed all round. "The name of *Heſſian fly* (ſays Mr Morgan) was given to this inſect by myſelf and a friend early after its firſt appearance on Long Iſland." In a letter to General Waſhington, dated July 31ſt 1788, Mr Morgan treats particularly of the inſect itſelf, and mentions ſeveral experiments made by himſelf to oppoſe its depredations. The reſult of theſe was that good culture of ſtrong ſoil, or well mauured lands, may ſometimes produce a crop of wheat or barley, when that ſowed on poor or middling ſoil, without the other advantages, will be totally deſtroyed. "But (ſays he) as the inſect lives in its aurelia ſtate in ſtraw and litter through the winter, I find that unmixed barn-yard manure ſpread on the land in the ſpring multiplies the fly to an aſtoniſhing degree; hence the farmer will ſee the neceſſity of mixing his yard with earth and marle in heaps; adding, where he can do it, a quantity of lime, and changing the heaps, after they have undergone the neceſſary fermentation, that their parts may be well incorporated, and a new digeſtion brought on, which will effectually deſtroy the inſect. Rolling of wheat juſt before the firſt froſt, in autumn, and ſoon after the laſt in ſpring, or before the wheat begins to pipe or ſpindle, has alſo a good effect. In the firſt place, it is a part of good culture; and, ſecondly, the roller cruſhes and deſtroys a great proportion of the inſect. Top-dreſſings of lime, or of live aſhes, are uſeful as manures, and may (when applied about the times I have mentioned as proper for rolling) be offenſive to the inſect; but if uſed in ſufficient quantity to deſtroy them, would, I believe, deſtroy the wheat alſo. In the year 1782, a particular ſpecies of wheat was introduced on Long Iſland, which is found to reſiſt the fly, and to yield a crop when all other wheats in the ſame neighbourhood are deſtroyed by it. But as this wheat has been incautiouſly ſowed in fields with other kinds, it has generally become ſo mixed by the farmers, as to ſuffer in its character in proportion to this mixture; inaſmuch, that ſome farmers, from inattention to this circumſtance, have condemned it altogether. Fortunately, however, ſome crops have been preſerved from this degeneration; and I was ſo lucky as to procure the whole of my laſt year's ſeed of the pureſt kind; the conſequence of which has been a good crop, whilſt my neighbours fields, ſowed with other kinds of wheat, have been either totally deſtroyed or materially injured. I have ſatisfied myſelf that this ſpecies of wheat was brought to New York in 1782; that a cargo of it was then ſent to Meſſrs Underhill's mill to be manufactured into flour; and that, from ſeed ſaved out

of this parcel, the yellow-bearded wheat was propagated. It is a generally received opinion, that the capacity of the yellow-bearded wheat to reſiſt the attacks of the fly is owing to the hardneſs or ſolidity of the ſtraw; but when we reflect that other wheats are ſometimes wholly cut off in the fall of the year, and ſometimes early in the ſpring, before the ſeaſon of its running to ſtraw, we ſhall be induced to aſſign ſome other cauſe. I cannot point out more than two diſtinctions of this from other wheats. The firſt is in the ear, at or after harveſt. The obvious difference, then, is in the colour of the chaff. The ſecond can only be obſerved by the miller, who ſays, "this grain requires to be more aired and dried than any other wheat before grinding or it will not yield its flower ſo kindly, as it is of a more oily nature; but when thus aired and dried the quality and quantity of its flour is equal to that of the beſt white wheat."

7. In a letter from Mr Wadſworth, dated 22d Auguſt 1788. we are informed, that the experiments made with elder juice, recommended as a preventative of this evil by Mr Bond, were fallacious, and had failed in every inſtance in 1787; but the efficacy of the yellow bearded wheat in reſiſting the attacks of the fly is confirmed. The progreſs of the fly northward is likewiſe confirmed; but we are told that it has diſappeared in many places near New York, where it formerly abounded.

8. In conſequence of the correſpondence between the marquis of Caermarthen and Mr Bond, the latter made very particular inquiry concerning this miſchievous inſect, and has given a better account of it than any of the above. "The Heſſian fly (ſays he) is a ſmall dark fly, with thin, long, black legs; clear tranſparent wings, extending far beyond the body of the trunk; with ſmall, though perceptible, horns or feelers projecting from the ſnout. Theſe I have ſeen appear in ſize and ſhape like a little fly which attacks cheeſe in this country, and which is very cloſely watched by the keepers of dairies here, as productive of the warm ſkippers which deſtroy cheeſe; and it is remarkable that the worm produced, from the egg of the Heſſian fly, though rather thinner and longer, bears a ſtrong reſemblance to the worm in cheeſe. The horns which evidently appear on the Heſſian fly may be provided by nature as feelers to enable them to perforate hard grain, as well as grain in a ſofter ſtate, tho' I have not yet ſeen any perſon who has perceived the egg, worm, or fly in the grain of the wheat, or who has found any nit, mucus, or even duſt in the dry ſtraw in ricks or barns, to induce a belief that the egg is there depoſited after the harveſt. One publication ſigned a Landholder, goes ſo far as to favour the idea that the fly even perforates the ſeed, and depoſits its eggs therein. His ideas have been condemned, as tending to miſlead others; but by no means confuted either by reaſon or experiment. An obſervation I made myſelf, gave me ſome cauſe to apprehend that the idea mentioned in the paper ſigned a Landholder was founded in fact: Upon examining a barn, in a country wherein the fly had not been known to injure the harveſt (though it has certainly made its appearance there within a few weeks), I obſerved in the flaws and apertures where the wood was decayed, over which cobwebs were woven, ſeveral of theſe flies entangled in the webs, many of them dead, but ſome alive, and ſtruggling to diſengage themſelves; from hence I concluded that there was a propenſity in the fly to get into the mow; but whether with a purpoſe of mere ſhelter and nurture, or with a view to depoſit its eggs, I am at a loſs to decide."

9. Mr Bond now refers to ſome obſervations by a Mr Potts and a Mr Cleaver, which, with ſeveral other papers on the ſubject, he had incloſed in his letter to the marquis. The former was a farmer in the county of Cheſter, who ſtacked his wheat in autumn 1788, at a time when the fly had not been ſeen in or near that county. About ſix or ſeven weeks after the harveſt he had occaſion to threſh ſome of his wheat; and with a view to prevent its ſcattering and waſting, he threw the ſheaves from the rick upon a large ſheet. On taking up the ſheaves to carry them to the threſhing-floor, he perceived a great number of flies, anſwering preciſely the deſcription of the Heſſian fly, lying upon the ſheet, ſome dead and others in a torpid ſtate; from whence he concluded that the fly had got a footing in his rick; but from any examination either of the ſtraw or grain, no trace of the eggs being depoſited was diſcovered. Mr Cleaver, a farmer in the ſame county, apprehending that the fly might approach his neighbourhood, ſowed ſome wheat in his garden, which grew ſo as to appear above ground in leſs than a fortnight, when a violent north-eaſt wind came on; and immediately after he perceived ſmall clouds of flies over and about the wheat he had ſown. He examined the grain in a few days; and found that numbers of the flies had depoſited their eggs in the heart of the main ſtalk, and many of them lay dead on the ground where the wheat was ſown, and near it. Many of the eggs were found in the ſtalk; and ſome ſmall white worms produced from other eggs were lately diſcovered in the ſtalk very near the root of the wheat. Wherever theſe worms were found, the whole of the individual ſtalk was perceptibly changing in point of colour, tending to a yellowiſh caſt; the top hanging down quite ſhrunk and withered. In ſome of the wheat which was carefully examined, the eggs were found within the ſtalk of a very minute ſize and whitiſh colour, with ſomething of a yellowiſh tinge. In thoſe where the worm was formed, it was carefully wrapped up ſurrounded by different coats of the ſhoot in which it lay, as if it had been ſkilfully and tenderly rolled up for its preſervation; around it the ſtalk was plainly eaten away ſometimes nearly through. The worm ſtrongly reſembles the ſkipper in cheeſe, ſomewhat thinner, and rather longer, of a whitiſh caſt. The ground on which this wheat was ſown was rich garden ground, high and dry; the natural ſoil a ſtrong red clay; few of the ſhoots, of which there were many in one cluſter in proportion to their number, were hurt by the fly. This was imputed to the ſtrength of the ſoil, which producing a robuſt powerful growth, reſiſted, in a great degree, the attack of the fly, though the weak ſhoots ſuffered generally.

10. A ſimilar account of the Heſſian fly is given by Mr Jacobs, an experienced farmer in the the county of Montgomery. From his obſervations the egg is uſually depoſited in the funnel or ſheath a little above the firſt joint. When the eggs are laid in the autumn or ſpring,

Heſſian Fly.

ſpring, they are utterly deſtructive of the growth of the wheat; but when they are depoſited ſhortly before the harveſt, the grain or even the ſtalk is ſcarcely affected, eſpecially in rich ground. The egg, he ſays, is at firſt very minute; it grows rapidly, becomes full and large, and turns to a brown hue, in ſize and colour very like a flax ſeed. A material difference was alſo perceived between rich and poor ground with reſpect to the ravages of the fly; but none between moiſt and dry ſoils. He is alſo of opinion that the yellow-bearded wheat will reſiſt the attacks of the fly; and that rolling and feeding the wheat will be of great ſervice.

11. A farmer in Jerſey, who dates his letter from Hunterdon, Jan. 30. 1787, obſerves that though the fly is ſuppoſed to advance about 15 miles annually, and neither waters nor mountains obſtruct its paſſage; yet when diſturbed, he never ſaw them take a flight of above five or ſix feet; nevertheleſs they are ſo active, that it is very difficult to catch them. They firſt appear towards the end of September; and ſoon after their eggs appear hatched, in colour and ſize like a flax-ſeed: they are very low at the joints ſome even in the ground; and here they harbour all winter. On the firſt appearance in any diſtrict, their numbers being ſmall they ſeldom cut off the crop in this ſtate, which is often the caſe the ſecond or third year. In the ſpring, after warm weather they again appear as a ſmall worm, and deſtroy the crop. The remedies propoſed by this farmer are, ſowing upon rich ground elder, and rolling. A gentleman whoſe account was dated on the firſt of November 1786, ſays, that their eggs reſemble what is commonly called the *fly-blow* on meat, being very ſmall, and only in one place. Soon after the other blades of wheat proceeding from the ſame kernel incloſe the firſt, the egg is covered, and agreeeable to the uſual progreſs of inſects arrives at the ſtate of a worm, and deſcends towards the root, where it conſumes the tender blade, ſometimes deſtroying the whole crop in the fall; but if by reaſon of the fertility of the ſoil, and other concurrent circumſtances, the vegetation is ſo rapid as to baffle their efforts, ſome of the latter-laid eggs, when at the worm ſtate, entrench themſelves in the ground to the depth of an inch or more, where he had found them after ſevere froſts changed from a white to a greeniſh colour and almoſt tranſparent; from this they proceed to the aurelia ſtate, and thus continue probably in the ground till the ſpring, when the fly is again produced, which again lays its eggs, and finiſhes the work begun in the fall to the total deſtruction of the crop. Another piece of intelligence he gives, but not from his own obſervation, that by feeding the wheat very cloſe in the winter and ſpring if the land is rich, it will again ſpring up, and the worms do not much injure the ſecond growth. By another correſpondent we are informed, that maritime places are leſs liable to be infeſted with the fly than the interior parts of the country; and therefore recommends as an experiment, that fine ſalt ſhould be ſprinkled on the wheat juſt before, or very ſoon after, the appearance of the fly. By others elder has been much recommended, as well as rolling, though the bearded wheat already mentioned ſeems to be the only effectual remedy.

12. By another communication from Mr Morgan to the Philadelphia Society for promoting agriculture,

Heſſian Fly.

he informs us, that he had made himſelf acquainted with the fly by breeding a number of them from the chryſalis into the perfect ſtate. The fly is at firſt of a white body with long black legs and whiſkers, ſo ſmall and motionleſs as not to be eaſily perceived by the naked eye, though very diſcernible with a microſcope; but they ſoon become black and very nimble, both on the wing and feet, being about the ſize of a ſmall ant. During the height of the brood in June, where 50 or 100 of the nits have been depoſited on one ſtalk of wheat, he has ſometimes diſcovered, even with the naked eye, ſome of them to twiſt and move on being diſturbed: this is while they are white; but they do not then travel from one ſtalk to another, nor to different parts of the ſame ſtalk. The uſual time of their ſpring hatching from the cryſalis is in May. "Thoſe (ſays he) who are doubtful whether the fly is in their neighbourhood, or cannot find their eggs or nits in the wheat may ſatisfy themſelves by opening their windows at night and burning a candle in the room. The fly will enter in proportion to their numbers abroad. The firſt night after the commencement of wheat harveſt, this ſeaſon, they filled my dining room in ſuch numbers as to be exceedingly troubleſome in the eating and drinking veſſels. Without exaggeration I may ſay, that a glaſs tumbler from which beer had been juſt drank at dinner, had 500 flies in it in a few minutes. The windows are filled with them when they deſire to make their eſcape. They are very diſtinguiſhable from every other by their horns or whiſkers." With regard to the cure, it ſeems to be confirmed that the ſowing of that called the *yellow bearded wheat* can only be depended upon. The fly indeed will reſide in fields of this wheat, and lay its eggs upon the ſtalks; but no injnry was ever known to happen except in one ſingle inſtance, where it was ſown in a field along with the common ſort, and that in a very ſmall proportion to it. By another account, however, we are told that this yellow-bearded wheat is equally liable to be deſtroyed in the autumn with the common kind; ſo that the only method of ſecuring the crop is by ſowing it late in the ſeaſon, when the fly is moſtly over.

13. The utmoſt pains were taken by the Britiſh government to find out whether this deſtructive inſect exiſts in Germany or any of the northern countries of Europe; but from the accounts received, it appears that it has not hitherto been obſerved, or at leaſt if it exiſts the damage done by it is too inconſiderable to attract notice.

14. From the whole correſpondence on this ſubject, which from the abridgement juſt now given of it is evidently ſomewhat diſcordant, Sir Joſeph Banks drew up a report for the privy council dated March 12. 1789, in which he ſtates the following particulars; 1. The appearance of the fly in Long Iſland was obſerved in 1779. We muſt ſuppoſe this to be meant that its deſtructive effects became then firſt perceptible; for it ſeems undoubtedly to have been known in the year 1776. 2. The opinion of colonel Morgan, that it was imported by the Heſſians, ſeems to be erroneous as no ſuch inſect can be found to exiſt in Germany or any other part of Europe. 3. Since its

firſt appearance in Long Iſland it has advanced at the rate of 15 or 20 miles a year, and neither waters nor mountains have impeded its progreſs. It was ſeen croſſing the Delaware like a cloud from the Fall's Townſhip to Makefield; had reached Saratoga, 200 miles from its firſt appearance, infeſting the counties of Middleſex, Somerſet, Huntington, Morris, Suſſex, the neighbourhood of Philadelphia, all the wheat counties of Connecticut, &c. committing the moſt dreadful ravages; attacking wheat, rye, barley, and timothy graſs. 4. The Americans who have ſuffered by this inſect, ſpeak of it in terms of the greateſt horror. In colonel Morgan's letter to ſir John Temple, he uſes the following expreſſions. "Were it to reach Great Britain, it would be the greateſt ſcourge that iſland ever experienced; as it multiplies from heat and moiſture, and the moſt intenſe froſts have no effect on the egg or aurelia. Were a ſingle ſtraw, containing the inſect, egg, or aurelia, to be carried and ſafely depoſited in the centre of Norfolk in England, it would multiply in a few years, ſo as to deſtroy all the wheat and barley crops of the whole kingdom. There cannot exiſt ſuch an attrocious villain as to commit ſuch an act intentionally. 5. No ſatisfactory account of the mode in which this inſect is propagated has hitherto been obtained. Thoſe who ſay that the eggs are depoſited on the ſtock from ſix or eight to 50, and by their growth compreſs and hinder the ſtalk from growing, are evidently erroneous, and the authors of them have plainly miſtaken the animal itſelf for its eggs. It is ſufficient to remember, that eggs do not grow or increaſe in bulk, to prove that what they obſerved was not eggs. 6. The landholders opinion, that the eggs are depoſited on the ripe grains of wheat ,though contradicted by colonel Morgan, is not diſproved, as the colonel advances no argument againſt it. 7. A letter dated New York, September 1. 1786, ſays that the eggs are depoſited on the young blade reſembling what we call a *fly-blow* in meat; very ſmall, and but one in a place: but this though the only natural mode of accounting for the appearance of the inſect, had it been true, muſt undoubtedly have been confirmed by numbers of obſervations. 8. Even though this ſhould be found hereafter to be the caſe, there will ſtill remain a danger of the aurelias being beaten off by the flail from the ſtraw in threſhing the wheat, and imported into Britain along with it; the preſence of theſe flies in barns having been fully proved by the obſervations of Meſſrs Potts and Bond. 9. None of the remedies propoſed againſt this deſtructive inſect have been in any degree effectual, excepting that of ſowing the yellow bearded wheat the ſtraw of which is ſufficiently ſtrong to reſiſt the impreſſion of the inſect, and even if its eggs are depoſited upon it,receives little injury in point of produce in grain: this provides, however, no remedy for the loſs of the barley crop, nor for that which muſt be incurred by ſowing the yellow-bearded wheat on lands better ſuited by nature for the produce of other kinds; it appears alſo that this very kind is liable to degenerate, and probably from a different cauſe than that propoſed by colonel Morgan, viz. the mixture with common wheat. 10 Though the agricultural Society at Philadelphia, as well as colonel Morgan have declared their opinions deciſively that no danger can ariſe from wheat imported into Britain, as the inſect has no immediate connection with the grain; yet with nearly if not exactly the ſame materials before him which theſe gentlemen were furniſhed with, Sir Joſeph Banks could not avoid drawing a concluſion directly contrary; and he concludes his report with the words of Mr Bond in a letter to the marquis of Caermarthen. "Satisfactory as it would be to my feelings to be able to ſay with preciſion, that I apprehend no danger of extending the miſchief by ſeed, my duty urges me to declare, that I have not heard or ſeen any concluſive fact by which I could decide in a matter of ſuch importance; and till that teſt occurs, the wiſdom of guarding againſt ſo grievous a calamity is obvious."

On the 27th of April the ſame year, another paper, by way of appendix to the foregoing was given in by ſir Joſeph Banks. In this he again obſerves, that none of the deſcriptions of any European inſect hitherto publiſhed anſwer exactly to the Heſſian fly. In a letter from Mr Bond to the marquis of Caermarthen he mentions another kind of inſect in the ſtate of Maryland, called by way of eminence *the fly*; and which in ſome things reſembles the Heſſian fly, though it cannot be accounted the ſame. It makes its way into the mow, and bites the ends of the grain perceptibly; and no doubt depoſits its eggs in the grain itſelf: ſince it has been obſerved, that wheat recently threſhed, and laid in a dry warm place, will ſoon be covered with an extreme clammy cruſt, which binds the wheat on the ſurface together in ſuch a way as to admit its being lifted in lumps; but the wheat beneath will not be hurt to any conſiderable depth. Such is the quality of this fly, that if the hand be inſerted into the heap affected by it, watery bliſters are immediately raiſed; and the farmers and ſlaves, riding upon bags of this infected wheat, never fail to be ſeverely bliſtered thereby. "This inſect (ſays he) is called in Maryland the *Revolution fly*, by the friends of the Britiſh government; but from all I can learn it is not the ſame inſect which originated on Long Iſland, and is called the *Heſſian fly* (by way of opprobrium) by thoſe who favoured the revolution. All the papers I have read on the Heſſian fly are very inaccurate, not to ſay contradictory; and I am convinced it is by no means a ſettled point at this moment in what manner and place the eggs of theſe inſects are depoſited. The policy which induced government to open the ports being founded on an appearance of a ſcarcity of corn, that evil may be remedied by the admiſſion of flour inſtead of grain; and tho' the countries from whence the flour is carried will have the advantage of the manufacture, ſtill that cannot be reckoned as an object, when oppoſed in the ſcale to an evil of ſuch immenſe magnitude as the introduction of ſo deſtructive an inſect may occaſion. The ravages here are beyond conception ruinous. Many farmers have had their crops ſo completely cut off as to be left without bread-corn or even ſeed-corn. If the meaſure of confining the importation to flour alone ſhould be adopted great attention ſhould be paid to the quality of the flour admitted into the Britiſh ports. An infinite deal of the wheat of the laſt harveſt is of a very wretched quality; and ſtratagems will be practiſed to give an extenſive vent to ſo eſſential a ſtaple of the middle ſtates of America."

In another letter to the ſame nobleman, Mr Bond expreſſes himſelf to the following purpoſe. "I have not been able to collect any decided information which fixes the eſſential point, how far the inſect may be communicated by ſeed. It is a matter at this time quite undecided here: nor have I heard or obſerved any very concluſive reaſon to ſuppoſe that the fly makes its way generally into barns and ricks. A very intelligent farmer in the county of Bucks, informed me that it was the prevailing opinion there, and ſo I found it, that the fly did not either in the field or in the mow affect the grain of the wheat: a neighbour of his, in threſhing the little wheat he had ſaved laſt harveſt, obſerved the fly riſe from the ſtraw in great numbers wherever it was ſtruck by the flail; but though it was at firſt preſumed that the fly had inſinuated itſelf into the mow for the purpoſe of depoſiting its eggs in the grain or in the ſtraw, no trace of the egg could be diſcovered from the appearance of any mucus or duſt, either in the grain or in the ſtraw; hence it was inferred that all the michief was done in the field."

HESYCHIUS, the moſt celebrated of all the ancient Greek grammarians whoſe works are now extant, was a Chriſtian; and, according to ſome, the ſame with Heſychius patriarch of Jeruſalem, who died in 609. He wrote a Greek lexicon; which, in the opinion of Caſaubon, is the moſt learned and uſeful work of that kind produced by the ancients. Schrevelius publiſhed a good edition of it in 1668, in 4to, with notes; but the beſt is that of John Alberti, printed at Leyden in 1746, in two vols folio.

HETERIARCH, Hæteriarcha, in antiquity, an officer in the Greek empire, whereof there were two ſpecies; the one called ſimply *heteriarch*, and the other *great heteriarch*, who had the direction of the former.

The word is Greek, εταιριαρχα, formed of the Greek εταιρος *ſocius*, "companion, ally," and αρχη *imperium*; "command." Their principal function was to command the troops of the allies; beſides which, they had ſome other duties in the emperor's court, deſcribed by Codin, *De Officiis*, cap. 5. n. 30, 31, 32, 37.

HETEROCLITE, Heterocliton, in grammar, an irregular or anomalous word, which either in declenſion, conjugation, or regimen, deviates from the ordinary rules of grammar. The word is Greek, ετεροκλιτον; formed of ετερος *alter*, "another different," and κλινω, "I decline."

Heteroclite is more peculiarly applied to nouns which vary or are irregular in point of declenſion; having fewer caſes, numbers, &c. than ordinary; or that are of one declenſion in one number, and another in another: as, *Hoc vas, vaſis; hæc vaſa, vaſorum.*

HETERODOX, in polemical theology, ſomething that is contrary to the faith or doctrine eſtabliſhed in the true church. The word is formed of the Greek ετεροδοξος; a compound of ετερος "alter" and δοξα "opinion." Thus, we ſay a *heterodox* opinion, a *heterodox* divine, &c. The word ſtands in oppoſition to *orthodox*.

HETEROGENEITY, in phyſics, the quality or diſpoſition which denominates a thing *heterogeneous*. The word is alſo uſed for the heterogeneous parts themſelves; in which ſenſe, the heterogeneities of a body are the ſame thing with the impurities thereof.

HETEROGENEOUS, or Heterogeneal, literally imports ſomething of a different nature, or that conſiſts of parts of different or diſſimilar kinds; in oppoſition to *homogeneous*. The word is Greek; formed of ετερος *alter*, "different," and γενος *genus*, "kind;" *q. d.* compoſed of different kinds of parts.

Heterogeneous Light, is by Sir Iſaac Newton ſaid to be that which conſiſts of rays of different degrees of refrangibility. Thus the common light of the ſun or clouds is hoterogeneous, being a mixture of all ſorts of rays.

Heterogeneous Nouns, one of the three variations in irregular nouns; or ſuch as are of one gender in the ſingular number, and of another in the plural.—Heterogeneous, under which are comprehended mixed nouns, are ſix-fold. 1. Thoſe which are of the maſculine gender in the ſingular number, and neuter in the plural; as, *hic tartarus, hæc tartara.* 2. Thoſe which are maſculine in the ſingular number, but maſculine and neuter in the plural; as, *hic locus, hi loci & hæc loca.* 3. Such as are feminine in the ſingular number, but neuter in the plural; as, *hæc carbaſus, & hæc carbaſa.* 4. Such nouns as are neuter in the ſingular number, but maſculine in the plural; as, *hoc cœlum, hi cœli.* 5. Such as are neuter in the ſingular, but neuter and maſculine in the plural; as, *hoc raſtrum, hi raſtri, & hæc raſtra.* And, 6. Such as are neuter in the ſingular, but feminine in the plural number; as, *hoc epulum, hæ epulæ.*

Heterogeneous Qantities, are thoſe which are of ſuch different kind and conſideration, as that one of them, taken any number of times, never equals or exceeds the other.

Heterogeneous Surds, are ſuch as have different radical ſigns; as, $\sqrt{aa}$, and $\sqrt[3]{bb}$; $\sqrt[5]{9}$, and $\sqrt[7]{19}$.

HETEROSCII, in geography, a term of relation, denoting ſuch inhabitants of the earth as have their ſhadows falling but one way, as thoſe who live between the tropics and polar circles; whoſe ſhadows at noon in north latitude are always to the northward, and in ſouth latitude to the ſouthward.

HETH, the father of the Hittites, was the eldeſt ſon of Canaan (Gen. x. 15.), and dwelt ſouthward of the promiſed land, at Hebron or thereabouts. Ephron, an inhabitant of Hebron, was of the race of Heth, and this whole city in Abraham's time was peopled by the children of Heth. There are ſome who maintain that there was a city called Heth, but we find no footſteps of it in the ſcripture.

HETRURIA, and Etruria, a celebrated country of Italy, on the weſt of the Tyber. It originally contained 12 different nations, which had each their reſpective monarch. Their names were Veientes, Cluſini, Peruſini, Cortonenſes, Arretini, Vetuloni, Volaterrani, Ruſellani, Volſcinii, Tarquinii, Faliſci, and Cæretani. The inhabitants were particularly famous for their ſuperſtition and ſtrict confidence in omens, dreams, auguries, &c. They all proved powerful and reſolute enemies to the riſing empire of the Romans, and were conquered only after much effuſion of blood.

HEVÆI (anc. geog.), one of the ſeven people who occupied Canaan; a principal and numerous people, and the ſame with the *Kadmonæi*, dwelling at the foot of

Heuchera || Heuſden

Hermon and partly of Libanus, or between Libanus and Hermon (Judges iii. 3.) To this Bochart refers the fables concerning Cadmus and his wife Harmonia, or Hermonia, changed to ſerpents; the name *Hevi* denoting a wild beaſt, ſuch as is a ſerpent. Cadmus, who is ſaid to have carried the uſe of letters to Greece, ſeems to have been a Kadmonean; of whom thè Greeks ſay that he came to their country from Phœnicia.

HEUCHERA, in botany; a genus of the digynia order, belonging to the pentandria claſs of plants. There are five petals; the capſule is biroſtrated and bilocular.

HEVELIUS, or Hevelke, (John), an eminent aſtronomer, was born at Dantzic in 1611. He ſtudied in Germany, England, and France, and every where obtained the eſteem of the learned. He was the firſt that diſcovered a kind of libration in the moon, and made ſeveral important obſervations on the other planets. He alſo diſcovered ſeveral fixed ſtars, which he named the *firmament of Sobieſki*, in honour of John III. king of Poland. His wife was alſo well ſkilled in aſtronomy, and made a part of the obſervations publiſhed by her huſband. In 1673 he publiſhed a deſcription of the inſtruments with which he made his obſervations, under the title of *Machina Cœleſtis:* and in 1679 he publiſhed the ſecond part of this work; but in September the ſame year, while he was at a ſeat in the country, he had the misfortune to have his houſe at Dantzic burnt down. By this calamity he is ſaid to have ſuſtained a loſs of ſeveral thouſand pounds; having not only his obſervatory and all his valuable inſtruments and apparatus deſtroyed, but alſo a great number of copies of his *Machina Cœleſtis;* which accident has made this ſecond part very ſcarce, and conſequently very dear. In the year 1690 were publiſhed *Firmamentum Sobieſcianum* and *Prodomus aſtronomicæ &. novæ tabulæ ſolares, una cum catalogo fixarum*, in which he lays down the neceſſary preliminaries for taking an exact catalogue of the ſtars. But theſe works are poſthumous; for Hevelius died in 1687, on his birth-day, aged 76. He was a man greatly eſteemed by his countrymen, not only on account of his great reputation and ſkill in aſtronomy, but as a very excellent and worthy magiſtrate. He was made a burgomaſter of Dantzic; which office he is ſaid to have executed with the utmoſt integrity and applauſe. He was alſo very highly eſteemed by foreigners; and not only by thoſe ſkilled in aſtronomy and the ſciences, but by foreign princes and potentates: as appears abundantly from a collection of their letters which were printed at Dantzic in the year 1683.

HEURNIUS, or Van Heurn, (John), a learned phyſician, was born at Utrecht in 1543; and ſtudied at Louvain, Paris, Padua, and Pavia. At his return to his native country he became magiſtrate of Amſterdam; after which he was profeſſor of phyſic at Leyden, and rector of the univerſity of that city, where he died in 1601. He wrote, among other works, ſeveral treatiſes on the diſeaſes of different parts of the body, and ſeveral commentaries on the works of Hiprocrates.—*Otho Heurnius* his ſon was alſo profeſſor of phyſic at Leyden, and wrote ſome books.

HEUSDEN, a ſtrong town of the United Provinces, in Holland, ſeated on the river Maeſe, among marſhes, with a handſome caſtle, in E. Long. 5. 3. N. Lat. 51. 47.

Hewſon || Hexapla.

HEWSON (William), a very ingenious anatomiſt, was born in 1739. He became aſſiſtant to Dr Hunter, and was afterwards in partnerſhip with him; but, on their diſagreement, read anatomical lectures at his own houſe (in which he was ſeconded by Mr Falconer). He wrote Inquiries into the Properties of the Blood, and the lymphatic Syſtem, 2 vols.; and diſputed with Dr Monro the diſcovery of the lymphatic ſyſtem of veſſels in oviparous animals. He died in 1774.

HEXACHORD, in ancient muſic, a concord called by the moderns a *ſixth*.

HEXAGON, in geometry a figure of ſix ſides and angles; and if theſe ſides and angles are equal, it is called a *regular hexagon*.

HEXAHEDRON, in geometry one of the five platonic bodies, or regular ſolids, being the ſame with a cube.

HEXAMETER, in ancient poetry a kind of verſe conſiſting of ſix feet; the firſt four of which may be indifferently either ſpondees or dactyles; the fifth is generally a dactyl and the ſixth always a ſpondee. Such is the following verſe of Horace:

1 2 3 4 5 6
Aut pro|deſſe vo|lunt, aut|dele|ctare po|etæ.

HEXAMILION, Hexamili, or *Hexamilium*, a celebrated wall, built by the emperor Emanuel in 1413 over the iſthmus of Corinth. It took its name from εξ *ſix*, and μιλιον, which in the vulgar Greek ſignifies a *mile*, as being ſix miles long.

The deſign of the hexamilion was to defend Peloponneſus from the incurſions of the barbarians. Amurath II. having raiſed the ſiege of Conſtantinople in the year 1422, demoliſhed the hexamilion, though he had before concluded a peace with the Greek emperor. The Venetians reſtored it in the year 1463, by 30,000 workmen, employed for 15 days, and covered by an army commanded by Bertoldo d'Eſte general of the land forces, and Louis Loredano commander of the ſea.—The infidels made ſeveral attempts upon it: but were repulſed, and obliged to retire from the neighbourhood thereof: but Bertoldo being killed at the ſiege of Corinth, which was attempted ſoon after, Bertino Calcinato, who took on him the command of the army, abandoned, upon the approach of the beglerbeg, both the ſiege and the defence of the wall which had coſt them ſo dear; upon which it was finally demoliſhed.

HEXANDRIA, in botany, (from εξ *ſix*, and *ανηο a man);* the name of the ſixth claſs in Linnæus's ſexual method, conſiſting of plants with hermaphrodite flowers, which are furniſhed with ſix ſtamina or male organs, that are of an equal length. See Botany, p. 430.

HEXAPLA (formed of εξ *ſix*, and αϖλοω *I open, I unfold*), in church hiſtory, a Bible diſpoſed in ſix columns; containing the text and divers verſions thereof compiled and publiſhed by Origen, with a view of ſecuring the ſacred text from future corruptions, and to correct thoſe that had been already introduced.

Euſebius. Hiſt. Eccl. lib. vi. cap. 16. relates, that Origen, after his return from Rome under Caracalla, applied himſelf to learn Hebrew, and began to collect the ſeveral verſions that had been made of the ſacred writings, and of theſe to compoſe his Tetrapla and Hexapla; others, however, will not allow him to have begun till the time of Alexander, after he had retired into Paleſtine, about the year 231.

To conceive what this Hexapla was, it muſt be obſerved, that, beſides the tranſlation of the ſacred writings, called the Septuagint, made under Ptolemy Philadelphus, above 280 years before Chriſt, the Scripture had been ſince tranſlated into Greek by other interpreters. The firſt of thoſe verſions, or (reckoning the Septuagint) the ſecond, was that of Aquila, a proſelyte Jew, the firſt edition of which he publiſhed in the 12th year of the emperor Adrian, or about the year of Chriſt 128; the third was that of Symmachus, publiſhed, as is commonly ſuppoſed, under Marcus Aurelius, but, as ſome ſay, under Septimius Severus, about the year 200; the fourth was that of Theodotion, prior to that of Symmachus, under Commodus, or about the year 175. Theſe Greek verſions, ſays Dr. Kennicott, were made by the Jews from their corrupted copies of the Hebrew, and were deſigned to ſtand in the place of the Seventy, againſt which they were prejudiced, becauſe it ſeemed to favour the Chriſtians. The fifth was found at Jericho, in the reign of Caracalla, about the year 217; and the ſixth was diſcovered at Nicopolis, in the reign of Alexander Severus, about the year 228: laſtly, Origen himſelf recovered part of a ſeventh, containing only the Pſalms.

Now Origen, who had held frequent diſputations with the Jews in Egypt and Paleſtine, obſerving that they always objected againſt thoſe paſſages of Scripture quoted againſt them, and appealed to the Hebrew text; the better to vindicate thoſe paſſages, and confound the Jews by ſhowing that the Seventy had given the ſenſe of the Hebrew, or rather to ſhow by a number of different verſions what the real ſenſe of the Hebrew was, undertook to reduce all theſe ſeveral verſions into a body along with the Hebrew text, ſo as they might be eaſily confronted, and afford a mutual light to each other.

He made the Hebrew text his ſtandard; and allowing that corruptions might have happened, and that the old Hebrew copies might and did read differently, he contented himſelf with marking ſuch words or ſentences as were not in his Hebrew text, nor the latter Greek verſions, and adding ſuch words or ſentences as were omitted in the Seventy, prefixing an aſteriſk to the additions, and an obeliſk to the others.

In order to this, he made choice of eight columns: in the firſt he gave the Hebrew text in Hebrew characters; in the ſecond the ſame text in Greek characters; the reſt were filled with the ſeveral verſions abovementioned; all the columns anſwering verſe for verſe, and phraſe for phraſe; and in the Pſalms there was a ninth column for the ſeventh verſion.

This work Origen called Εξαπλα *Hexapla*, q. d. *ſextuple*, or work of ſix columns, as only regarding the firſt ſix Greek verſions. See Tetrapla.

Indeed, St. Epiphanius, taking in likewiſe the two columns of the text, calls the work *Octapla*, as conſiſting of eight columns.

This celebrated work, which Montfaucon imagines conſiſted of fifty large volumes, periſhed long ago, probably with the library at Cæſarea, where it was preſerved, in the year 653; though ſeveral of the ancient writers have preſerved us pieces thereof: particularly St Chryſoſtom on the Pſalms, Philoponus in his Hexameron, &c. Some modern writers have earneſtly endeavoured to collect fragments of the Hexapla, particularly Flaminius Nobilius, Druſius, and F. Montfaucon, in two folio volumes, printed at Paris in 1713.

HEXASTYLE, in architecture, a building with ſix columns in front.

HEXHAM, a town of Northumberland, ſituated near the conflux of the north and ſouth Tyne. It is commonly reckoned to be the *Alexodunum* of the Romans, where the firſt cohort of the Spaniards were in garriſon. It was made a biſhop's ſee by Etheldreda, wife of king Egfred, in the year 675. Its firſt biſhop St Wilfred built here a moſt magnificent cathedral and monaſtery, and it was poſſeſſed by ſeven biſhops ſucceſſively; but being very much infeſted by the Danes, the ſee was removed to York. The town and priory were deſtroyed by the Scots in 1296, and pillaged again in 1346. There was a remarkable and bloody battle fought near this town between the houſes of Lancaſter and York, wherein the former were defeated, chiefly by the extraordinary bravery and conduct of John Nevil, lord Montacute, who was for that reaſon created earl of Northumberland. The preſent town is not populous, and the ſtreets are narrow, with ill built houſes. The market-place, near the centre of the town, is a ſpacious ſquare, and is ſupplied by a fountain with water. Among the remains of ancient ſtructures, is a gateway of Saxon architecture, leading to the priory, but of a much older date. There are two ancient towers in the town, one of which is uſed as a ſeſſions-houſe, and was formerly an exploratory tower; the other is on the top of a hill towards the Tyne, of remarkable architecture, which has been much higher than at preſent, and has two dungeons within it, beſides ſeveral chambers with very little narrow windows. The town has a charity or grammar ſchool. It was in 1571 annexed to the county of Cumberland; but only in civil matters; for its eccleſiaſtical juriſdiction is not the ſame with the reſt of the county, it being ſtill a peculiar belonging to the archbiſhop of York; and the vulgar ſtill call the neighbouring country Hexhamſhire. It is a corporation governed by a bailiff choſen yearly. Newcaſtle is about 15 miles diſtance. The markets here are Tueſday and Saturday; fairs on Auguſt 5. and November 8. A rivulet, called Hexbold, runs by the town, which ſometimes overflows ſuddenly.

HEYDON, a little, pleaſant, well-built town of Yorkſhire, in that part called *Holderneſſe*, ſeated on a river that falls into the Humber. It has now but one church, tho' there are the remains of two more; and had formerly a conſiderable trade, which is now loſt, on account of its being ſo near Hull. The houſes being rebuilt, adds to the beauty of the place. It is a corporation; and is governed by a mayor, a recorder, nine aldermen, and two bailiffs, who have the power of chooſing ſheriffs, and are juſtices of the peace. It ſends two members to parliament. W. long. 0. 55. N. Lat. 53. 46.

Heydon (John), who ſometimes aſſumed the name of *Eugenius Theodidactus*, was a great pretender to ſkill in the Roſicrucian philoſophy and the celeſtial ſigns, in the reign of king Charles I.; and wrote a conſiderable number of chemical and aſtrological works, with very ſingular titles. This ridiculous author was much reſorted to by the duke of Buckingham, who was infatuated with judicial aſtrology. He employed him to calculate the king's and his own nativity, and was aſſured that his ſtars had promiſed him great things. The duke alſo employed Heydon in ſome treaſonable and ſeditious practices, for which he was ſent to the Tower. He loſt much of his former reputation by telling Richard Cromwell and Thurloe who went to him diſguiſed like cavaliers, that Oliver would infallibly be hanged by a certain time; which he outlived ſeveral years.

HEYLIN (Dr Peter), an eminent Engliſh writer, was born at Burford, in Oxfordſhire, in 1600. He ſtudied at Hart Hall, Oxford; where he took his degrees in arts and divinity, and became an able geographer and hiſtorian. He was appointed one of the chaplains in ordinary to king Charles I. was preſented to the rectory of Hemingford in Huntingdonſhire, made a prebendary of Weſtminſter, and obtained ſeveral other livings: but of theſe he was deprived by the parliament, who alſo ſequeſtered his eſtate; by which means he and his family were reduced to great neceſſity. However, upon the reſtoration, he was reſtored to his ſpiritualities; but never roſe higher than to be ſubdean of Weſtminſter. He died in 1662; and was interred in St Peter's church in Weſtminſter, where he had a neat monument erected to his memory. His writings are very numerous: the principal of which are, 1. *Microcoſmus*, or a Deſcription of the Great World. 2. *Coſmographia*. 3. The Hiſtory of St George. 4. *Eccleſia Vindicata*, or the Church of England Juſtified. 5. Hiſtorical and Miſcellaneous Tracts, &c.

HEYWOOD (John), one of the moſt ancient dramatic poets, was born at North-Mims, near St Alban's in Hertfordſhire, and educated at Oxford. From thence he retired to the place of his nativity, where he had the good fortune to become acquainted with Sir Thomas More, who, it ſeems, had a ſeat in that neighbourhood. This patron of genius introduced this comic poet to the princeſs Mary, and afterwards to her father Henry, who, we are told, was much delighted with his wit and ſkill in muſic, and by whom he was frequently rewarded. When his former patroneſs, queen Mary, came to the crown, Heywood became a favourite at court, and continued often to entertain her majeſty, *exerciſing his fancy before her, even to the time that ſhe lay languiſhing on her deathbed.* On the acceſſion of Elizabeth, being a zealous Papiſt, he thought fit to decamp, with other favourites of her deceaſed Majeſty. He ſettled at Mechlin in Flanders, where he died in the year 1565.—John Heywood was a man of no great learning, nor were his poetical talents by any means extraordinary; but he poſſeſſed talents of more importance in the times in which he lived, namely, the talents of a jeſter. He wrote ſeveral plays; 500 epigrams; *A Dialogue in Verſe concerning Engliſh Proverbs*; and *The Spider and Fly, a Parable*, a thick 4to. Before the title of this laſt work is a whole-length wooden print of the author; who is alſo repreſented at the head of every chapter in the book, of which there are 77.—He left two ſons, who both became Jeſuits and eminent men: viz. Ellis Heywood, who continued ſome time at Florence under the patronage of cardinal Pole, and became ſo good a maſter of the Italian tongue, as to write a a treatiſe in that language, intitled *Il Moro*; he died at Louvain about the year 1572. His other ſon was Jaſper Heywood, who was obliged to reſign a fellowſhip at Oxford on account of his immoralities: he tranſlated three tragedies of Seneca, and wrote various poems and deviſes; ſome of which were printed in a volume intitled *The Paradiſe of Dainty Deviſes*, 4to, 1573. He died at Naples in 1597.

Heywood (Eliza), one of the moſt voluminous novel writers that Britain ever produced; of whom we know no more than that her father was a tradeſman, and that ſhe was born about the year 1696. In the early part of her life, her pen, whether to gratify her own diſpoſition on the prevailing taſte, dealt chiefly in licentious tales, and memoirs of perſonal ſcandal; the celebrated Atalantis of Mrs Manley ſerved her for a model; *and The Court of Carimania, The new Utopia*, with ſome other pieces of a like nature, were the copies her genius produced. She alſo attempted dramatic writing and performance, but did not ſucceed in either. Whatever it was that provoked the reſentment of Pope, he gave full ſcope to it by diſtinguiſhing her as one of the prizes to be gained in the games introduced in honour of Dullneſs, in his Dunciad. Nevertheleſs, it ſeems undeniable, that there is much ſpirit, and much ingenuity, in her manner of treating ſubjects, which the friends of virtue may perhaps wiſh ſhe had never meddled with at all. But, whatever offence ſhe may have given to delicacy or morality in her early works, ſhe appears to have been ſoon convinced of, and endeavoured to atone for, in the latter part of her life; as no author then appeared a greater advocate for virtue. Among her riper productions may be ſpecified, *The Female Spectator*, 4 vols; *The Hiſtory of Miſs Betſy Thoughtleſs*, 4 vols; *Jemmy and Jenny Jeſſamy*, 3 vols; *The inviſible Spy*, 4 vols; with a pamphlet intitled *A preſent for a ſervant-maid*. She died in 1759.

HIAMEN, or Emouy. See Emouy.

HIATUS, properly ſignifies an opening, chaſm, or gap; but it is particularly applied to thoſe verſes where one word ends with a vowel, and the following word begins with one, and thereby occaſion the mouth to be more open, and the ſound to be very harſh.

The term *hiatus* is alſo uſed in ſpeaking of manuſcripts, to denote their defects, or the parts that have been loſt or effaced.

HIBISCUS, Syrian mallow: A genus of the polyandria order, belonging to the monodelphia claſs of plants; and in the natural method ranking under the 37th order, *Columniferæ*. The calyx is double, the exterior one polyphyllous, the capſule quinquelocular and polyſpermous.

Species. Of this genus there are 36 ſpecies; the moſt remarkable are, 1. The Syriacus, commonly called *althræa frutex*, is a native of Syria. It riſes with ſhrubby ſtalks to the height of eight or ten feet, ſending out many woody branches covered with a ſmooth grey bark, garniſhed with oval ſpear-ſhaped leaves, whoſe upper parts are frequently divided into three lobes. The flowers come out from the wings of the ſtalk at every joint of the ſame year's ſhoot. They are large, and ſhaped like thoſe of the mallow, having five large, roundiſh petals which join at their baſe, ſpreading open at the top, in the ſhape of an open bell. Theſe appear in Auguſt; and if the ſeaſon is not too warm, there will be a ſucceſſion of flowers till September. The flowers are ſucceeded by ſhort capſules, with five cells, filled with kidney-ſhaped ſeeds; but unleſs the ſeaſon proves warm, they will not ripen in Britain. Of this ſpecies there are four or five varieties, differing in the colour of their flowers: the moſt common hath pale purple flowers with dark bottoms; another hath bright purple flowers with black bottoms; a third hath white flowers with purple bottoms; and a fourth variegated flowers with dark bottoms. There are alſo two with variegated leaves, which are by ſome much eſteemed. All theſe varieties are very ornamental in a garden. 2. The Roſa Sinenſis, with an arboreſcent ſtem, and egg-pointed ſawed leaves. It is a native of the Eaſt-Indies, whence it has got the name of *China roſe*; but the ſeeds having been carried by the French to their Weſt-India ſettlements, it hath thence obtained the name of *Martinico roſe*. Of this there are the double and ſingle flowering kinds; the ſeeds of the firſt frequently produce plants that have only ſingle flowers, but the latter ſeldom vary to the double kind. 3. The mutabilis, or changeable roſe, has a ſoft ſpongy ſtem, which by age becomes ligneous and pithy. It riſes to the height of 12 or 14 feet, ſending out branches towards the top, which are hairy, garniſhed with heart-ſhaped leaves, cut into five acute angles on their borders, and ſlightly ſawed on their edges; of a lucid green on the upper ſide, but pale below. The flowers are produced from the wings of the leaves; the ſingle are compoſed of five petals which ſpread open, and are at firſt white, but afterwards change to a bluſh roſe colour, and as they decay turn purple. In the Weſt-Indies, all theſe alterations happen on the ſame day, and the flowers themſelves are of no longer duration; but in Britain the changes are not ſo ſudden. The flowers are ſurrounded by ſhort, thick, blunt, capſules, which are very hairy; having five cells, which contain many ſmall kidney-ſhaped ſeeds, having a fine plume of fibrous down adhering to them. 4. The albemoſchus, or muſk-ſeeded hibiſcus, is a native of the Weſt-Indies, where the French cultivate great quantities of it. The plant riſes with an herbaceous ſtalk three or four feet high, ſending out two or three ſide branches, garniſhed with large leaves cut into ſix or ſeven acute angles, ſawed on their edges, having long footſtalks, and placed alternately. The ſtacks and leaves of this ſort are very hairy. The flowers come out from the wings of the leaves upon pretty long footſtalks which ſtand erect. They are large, of a ſulphur colour, with purple bottoms; and are ſucceeded by pyramidical five-cornered capſules, which open in five cells, filled with large kidney-ſhaped ſeeds of a very muſky odour. 5. The tiliaceus, or maho-tree, is a native of both the Indies. It riſes with a woody, pithy ſtem, to the height of ten feet, dividing into ſeveral branches towards the top, which are covered with a woolly down, garniſhed with heart-ſhaped leaves ending in acute points. They are of a lucid green on their upper ſide, and hoary on the under ſide, full of large veins, and are placed alternately. The flowers are produced in looſe ſpikes at the end of the branches, and are of a whitiſh-yellow colour. They are ſucceeded by ſhort acuminated capſules, opening in five cells, filled with kidney-ſhaped ſeeds. 6. The trionum, Venice mallow, or flower of an hour, is a native of ſome parts of Italy, and has long been cultivated in the gardens of England. It riſes with a branching ſtalk a foot and a half high, having many ſhort ſpines, which are ſoft and do not appear unleſs cloſely viewed: the leaves are divided into three lobes, which are deeply jagged almoſt to the midrib. The flowers come out at the joints of the ſtalks, upon pretty long foot-ſtalks. They have a double empalement; the outer being compoſed of ten long narrow leaves, which join at their baſe: the inner is of one thin leaf ſwollen like a bladder, cut into five acute ſegments at the top, having many longitudinal purple ribs, and is hairy. Both theſe are permanent, and incloſe the capſule after the flower is paſt. The flower is compoſed of five obtuſe petals; which ſpread open at the top; the lower part forming an open bell-ſhaped flower. Theſe have dark purple bottoms, but are of a pale ſulphur-colour above. In hot weather the flowers continue but a few hours open; however, there is a ſucceſſion of flowers that open daily for a conſiderable time. 7. The eſculentus, or eatable hibiſcus, riſes to five or ſix feet; has broad five parted leaves, and yellow large flowers. The pod or okra is from two to ſix inches long, and one inch diameter. When ripe, it opens longitudinally in five different places, and diſcharges a number of heart-ſhaped ſeeds.

Culture. The firſt ſort may be propagated either by ſeeds or cuttings. The ſeeds may be ſown in pots filled with light earth about the latter end of March, and the young plants tranſplanted about the ſame time next year. They will ſucceed in the full ground; but muſt be covered in winter whilſt young, otherwiſe they are apt to be deſtroyed. The ſecond, third, fifth, and ſeventh ſorts are propagated by ſeeds; which muſt be ſown in a hot-bed. The young plants are to be tranſplanted into ſmall ſeparate pots, and treated like other tender vegetables, only allowing them a good ſhare of air. The fourth ſort is annual in Britain, though biennial in thoſe places where it is native. It is propagated by ſeeds, and muſt be treated in the manner directed for Amaranth. The ſixth ſort is propagated by ſeeds, which ſhould be ſown where the plants are deſigned to remain, for they do not bear tranſplanting well. They require no other culture than to be kept free from weeds, and thinned where they are too cloſe; and if the ſeeds are permitted to ſcatter, the plants will come up fully as well as if they had been ſown.

Uſes. The fourth ſort is cultivated in the Weſt-Indies by the French for the ſake of its ſeeds. Theſe are annually ſent to France in great quantities, and form a conſiderable branch of trade, but the purpoſes which they anſwer are not certainly known. The inner rind of the fifth ſort is very ſtrong, and of great eſteem, which the following recital from Dampier may ſerve to illuſtrate: They (the Muſketo Indians) make their lines, both for fiſhing and ſtriking, with the bark of Maho, which is a ſort of tree or ſhrub that grows plentifully all over the Weſt-Indies, and whoſe bark is made up of ſtrings or threads very ſtrong; you may draw it off either in ſtakes or ſmall threads, as you have occaſion.—It is fit for any manner of cordage, and privateers often make their rigging of it. See further the article Bark.

The ſeventh ſort is a native of the Weſt-Indies, where it is cultivated in gardens and encloſures as an article of food.—The whole of it is mucilaginous, eſpecially the pods. "Theſe (Dr Wright informs us) are gathered green, cut into pieces, dried, and ſent home as preſents, or are boiled in broths or ſoups for food. It is the chief ingredient in the celebrated pepper-pot of the Weſt-Indies, which is no other than a rich olla: the other articles are either fleſh meat, or dried fiſh and capſicum. This diſh is very palatable and nouriſhing.—As a medicine okra is employed in all caſes where emollients and lubricants are indicated."

HICETAS of Syracuſe, an ancient philoſopher and aſtronomer, who taught that the ſun and ſtars were motionleſs, and that the earth moved round them. This is mentioned by Cicero, and probably gave the firſt hint of the true ſyſtem of Copernicus. He flouriſhed 344 B. C.

HICKES (George), an Engliſh divine of extraordinary parts and learning, born in 1642. In 1681 he was made king's chaplain, and two years after dean of Worceſter. The death of Charles II. ſtopped his farther preferment; for though his church principles were very high, he manifeſted too much zeal againſt Popery to be a favourite with James II. On the revolution, he with many others was deprived for refuſing to take the oaths to king William and queen Mary; and ſoon after, archbiſhop Sancroft and his colleagues conſidering how to maintain epiſcopal ſucceſſion among thoſe who adhered to them, Dr Hickes carried over a liſt of the deprived clergy to king James; and with his ſanction a private conſecration was performed, at which it is ſaid lord Clarendon was preſent. Among the reſt Dr Hickes was conſecrated ſuffragan biſhop of Thetford, and died in 1715.—He wrote, 1. *Inſtitutiones Grammaticæ Anglo Saxonicæ, et Mœſo Gothicæ.* 2. *Antiqua literatura ſeptentrionalis.* 3. Two treatiſes, one of the Chriſtian prieſthood, the other of the dignity of the epiſcopal order. 4. Jovian, or an anſwer to Julian the apoſtate. 5. Sermons; with many temporary controverſial pieces on politics and religion.

HICKUP, or Hicough, a ſpaſmodic affection of the ſtomach, œſophagus, and muſcles ſubſervient to deglutition, ariſing ſometimes from ſome particular injury done to the ſtomach, œſophagus, diaphragm, &c. and ſometimes from a general affection of the nervous ſyſtem. See (the *Index* ſubjoined to) Medicine.

HIDAGE *(Hidagium)*, was an extraordinary tax payable to the kings of England for every hide of land. This taxation was levied not only in money, but in proviſion, armour, &c.; and when the Danes landed in Sandwich in 994, king Ethelred taxed all his lands by hides; ſo that every 310 hides found one ſhip furniſhed, and every eight hides furniſhed one jack and one ſaddle, to arm for the defence of the kingdom, &c.—Sometimes the word *hidage* was uſed for the being quit of that tax: which was alſo called *hidegild*; and interpreted from the Saxon, "a price or ranſom paid to ſave one's ſkin or hide from beating."

HIDALGO, in modern hiſtory, a title given in Spain to all who are of noble family.

The Hidalgos claim a deſcent from thoſe valiant ſoldiers who retired into Caſtile, and the mountains of Aſturias, and other remote parts of Spain, on the invaſion of the Moors, where having fortified themſelves, they ſucceſſively deſcended into the plains, in proportion to the ſucceſs of their arms: from the notoriety of their perſons, or the lands they became poſſeſſed of, they acquired the appellation of *Hidalgos notorios, Hidalgos de ſolar conocido* or *de caſa ſolariega.* Of theſe, according to Hernando Mexia, there are three ſorts; the firſt being lords of places, villages, towns, or caſtles, from whence they took their ſirnames, as the Guzmans, Mendozas, Laras, Guivaras, and others; the ſecond, who recovered any fortreſs from the Moors, as the Ponces of Leon, and others; and the third ſort, from the places where they reſided, or held juriſdiction, as Rodrigo de Narvaez was called of Antequera, from being Alcayde there. But this definition is not conſidered as exact or concluſive by Otalora, another civilian, who ſays that the true meaning of *Hidalgos de ſolar conocido* is explained by the laws of Caſtile to be a well known manſion or poſſeſſion, the nature of which is particularly explained in the laws of *Parditas,* lib. 5. tit. 35. which deſcribes three ſorts of tenures called *Deviſa, Solariega,* and *Behetria.* By the firſt, lands are deviſed by the anceſtor; *ſolar* is a tenure upon another perſon's manor, and obliges the owner to receive the lord of the fee when neceſſity obliges him to travel; and *Behetria* is in the nature of an *allodium.* In proportion as theſe Aborigines gained ground on the Moors, and increaſed in their numbers, many private perſons diſtinguiſhed themſelves by their valour, and obtained teſtimonies of their ſervices, called *cartas de merced,* which ſerved them as a foundation of their birth and good deſcent, without which documents their poſterity could not make it appear; and if from a lapſe of time, or other unavoidable accidents, ſuch proof ſhould happen to be loſt or deſtroyed, the law affords them a remedy under theſe circumſtances, by a declaration, importing, that ſuch perſons as are ſuppoſed to have had ſuch certificates, may be relieved by making it appear that their anceſtors, time immemorial, have always been held and reputed as Hidalgos, and enjoyed the privileges of ſuch, from a ſtrong preſumption in their favour; the poſſeſſion of land having equal force to any other document; which is fully ſet forth in the *Pragmatica* of Cordova. To theſe executory letters are granted, *cartas executorias,* expreſſive of their privileges: and for the better regulation of theſe matters, proper officers are appointed in the chancery courts, called *alcaldes de lor hidalgos,* who ought to be *hidalgos* themſelves, and hold juriſdiction in theſe caſes, and no others: but even here innovations have taken place; for as theſe grants flow from the ſovereign, who is the fountain of honour, ſome are declared *Hidalgos de ſangre,* by right of deſcent, and others *de privilegio,* or by office, in which the will of the ſovereign has made amends for any deficiency of blood.

There is a ſet of people near Segovia, at a place called Zamarramala, who are exempt from tribute on account of the care they take in ſending proper perſons every night to the caſtle of Segovia to keep centinel—one cries out *Vela, vela, hao,* and the other blows a horn, from whence they have been titled *hidalgos by the horn.* In Catalonia thoſe gentlemen who are ſtyled *Hombre de Pareja,* are conſidered the ſame as *hidalgos* in Caſtile, and were ſo called from the word *parejar,* to equip, this name being given as a diſtinction by Borelo the 4th count of Barcelona, at the ſiege of that city, in 965, who ſummoning all his vaſſals to come to his aſſiſtance againſt the Moors, nine hundred horſemen well mounted and equipped joined him, and with their aid he took the city; and this appellation has been given in honourable remembrance of this loyal action.

Theſe noble hidalgos enjoy many privileges and diſtinctions; of which the following are the principal.

1. The firſt and greateſt privilege which they hold by law is to enjoy all poſts of dignity and honour in the church and ſtate, with liberty, when churchmen, of having a plurality of benefices. They are qualified for receiving all orders of knighthood, and are to be preferred in all embaſſies, governments, and public commiſſions.

2. When they are examined as witneſſes in civil and criminal caſes, their depoſitions are to be taken in their own houſes, without being obliged to quit them to go to thoſe of others.

3. In all churches, proceſſions, and other public acts or aſſemblies, they are to have the next place of honour and precedency after the officers of juſtice, conforming themſelves to particular cuſtoms.

4. They are not obliged to accept of any challenge for combat, ſuppoſing ſuch were allowed of, but from thoſe who are their equals.

5. Though it is forbidden to guardians to purchaſe the eſtates of minors, this does not extend to Hidalgos, in whom the law does not ſuppoſe any fraud, and they may purchaſe them publicly.

6. They are permitted to be ſeated in courts of juſtice in preſence of the judges, from the reſpect and honour due to them. They have alſo ſeats in the courts of chancery, in conſideration of their birth, which gives them a right to be near the perſons of princes.

7. Their perſons are free from arreſt for debt, nor can any attachment be laid on their dwelling-houſes, furniture, apparel, arms, horſes, or mules in immediate uſe: nor can they make a ceſſion of their eſtates, nor be diſtreſſed in ſuits of law, farther than their circumſtances will admit of, but are to be allowed a reaſonable and decent maintenance for their ſupport.

8. In caſes of impriſonment for criminal matters, they are to be treated differently from others. They are generally confined to their own houſes with a ſafe guard, or under arreſt upon their honour, or allowed the city or town they lived in, and in particular caſes are ſent into caſtles.

9. When puniſhments are inflicted for criminal caſes, they are to be leſs ſevere to them than to others, as they are not to ſuffer ignominious puniſhments, ſuch as public ſhame, whipping, gallies, nor are they to be hanged, but beheaded, excepting in caſes of treaſon or hereſy. In caſes that do not imply a corporal puniſhment but a pecuniary one, they are treated with more rigour, and pay a larger fine than others.

10. They are not to be put to the rack or torture, excepting for ſuch heinous crimes as are particularly ſpecified by the laws.

11. When there are title-deeds or other writings or papers in which two or more perſons have an equal right or property, and require a particular charge, they are to be given up by preference to the cuſtody of an Hidalgo, if any of the parties are ſuch.

12. The daughter of an Hidalgo enjoys every privilege of her birth, though married to a commoner; and a woman who is not an Hidalgo enjoys all theſe privileges when ſhe is a widow, following the fortune of her huſband.—But if the widow is an Hidalgo, and the late huſband was a commoner, ſhe falls into the ſtate of her huſband after his death, though ſhe had the privileges of her birth during his life.

13. They are free from all duties, called *Pechos, Pedidos, Monedas, Marteniegas, Contribuciones,* as well royal as civil, and all other levies of whatever kind they may be, with a reſerve for ſuch as are for the public benefit, in which they are equally concerned, ſuch as the repairing the highways, bridges, fountains, walls, deſtruction of locuſts, and other vermin.

14. They are free from perſonal ſervice, and from going to the wars, excepting when the king attends in perſon; even then they are not to be forced, but invited, and acquainted that the royal ſtandard is diſplayed.

15. No perſons whatever can be quartered upon, or lodged in their houſes, except when the king, queen, prince or infantes are on the road, as in ſuch caſes even the houſes of the clergy are not exempt.

16. They cannot be compelled to accept of the office of receiver of the king's rents, or any other employment which is conſidered as mean and derogatory to their dignity and rank.

17. By a particular cuſtom confirmed by royal authority in that part of Caſtile beyond the Ebro, baſtards ſucceed to their parents, and enjoy their honours contrary to the royal and common law.

18. If a lady, who marries a commoner, ſhould be a queen, ducheſs, marchioneſs, or counteſs (for they have no baron in Caſtile), ſhe not only does not loſe her rank, but conveys her titles to her huſband, who holds them in right of his wife.

Theſe are the general privileges which the Hidalgos enjoy; there are ſome others of leſs conſequence, as well as particular grants to certain perſons and families. An ancient and ridiculous cuſtom is ſaid to be obſerved by noble ladies who are widows of plebeians, in order to recover their birthright, for which purpoſe they carry a pack-ſaddle on their ſhoulders to their huſband's grave, then throwing it down and ſtriking it three times, ſay, 'Villein, take thy villeiny, for I will abide by my nobility:' and then they recover their privileges again.

HIDE, the ſkin of beaſts; but the word is particularly applied to thoſe of large cattle, as bullocks, cows, horſes, &c.

Hides are either raw or green, juſt as taken off the carcaſe; ſalted, or ſeaſoned with ſalt, alum, and ſaltpetre, to prevent their ſpoiling; or curried and tanned. See TANNING.

HIDE of Land, was ſuch a quantity of land as might be ploughed with one plough within the compaſs of a year, or as much as would maintain a family; ſome call it 60, ſome 80, and others 100 acres.

HIDE-Bound. See FARRIERY, xxiii.

HIERACIUM, HAWKWEED: A genus of the polygamia æqualis order, belonging to the ſyngeneſia claſs of plants; and in the natural method ranking under the 49th order, *Compoſitæ*. The receptacle is naked, the calyx imbricated and ovate; the pappus ſimple and ſeſſile.

Species. 1. The aurantiacum, commonly called *grim the collier*, hath many oblong oval entire leaves, crowning the root; an upright, ſingle hairy, and almoſt leafleſs ſtalk, a foot high, terminated by reddiſh orange-coloured flowers in a corymbus. Theſe flowers have dark and aſh coloured calices; whence the name of *grim the collier*. 2. The piloſella or mouſe-ear, hath bloſſoms red on the out-ſide, and pale yellow within; the cups ſet thick with black hairs. The flowers open at eight in the morning, and cloſe about two in the afternoon. 3. The umbellatum grows to the height of three feet, with an erect and firm ſtalk, terminated with an umbel of yellow flowers.

Culture. The firſt is the only ſpecies cultivated in gardens. It is propagated by ſeeds, or parting the roots. The ſeed may be ſown in autumn or ſpring. In June, when the plants are grown two or three inches high, they may be picked out and planted in beds, where they muſt remain till the next autumn, and then tranſplanted where they are to remain.

Properties. The ſecond ſpecies is commonly in dry paſtures in England; it has a milky juice, but is leſs bitter and aſtringent than is uſual with plants of that claſs. It is reckoned hurtful to ſheep. An inſect of the cochineal genus (*Coccus Polonnicus*) is often found at the roots, (*Act. Upſal.* 1752.) Goats eat it; ſheep are not fond of it; horſes and ſwine refuſe it.—The third ſpecies is a native of Scotland, and grows in rough ſtony places, but it is not very common. The flowers are ſometimes uſed for dying yarn of a fine yellow colour.

HIERACITES, in church-hiſtory, Chriſtian heretics in the third century: ſo called from their leader Hierax, a philoſopher of Egypt; who taught that Melchiſedek was the Holy Ghoſt, denied the reſurrection, and condemned marriage.

HIERANOSIS, or MORBUS SACER. See (the *Index* ſubjoined to) MEDICINE.

HIERA PICRA. See PHARMACY, nº 826.

HIERAPOLIS, (anc. geog.), a town of Phrygia, abounding in hot ſprings; and having its name from the number of its temples. There are coins exhibiting figures of various gods who had temples here. Of this place was Epictetus the ſtoic philoſopher.—It is now called *Pambouk*; and is ſituated near the Scamander, on a portion of Mount Meſogis, diſtant ſix miles from Laodicea.—Its ſite appears at a diſtance as a white lofty cliff; and upon arriving at it, the view which it preſents is ſo marvellous (ſays Dr Chandler), that the deſcription of it, to bear even a faint reſemblance, ought to appear romantic. Dr Chandler's deſcription is as follows:

Travels in Aſia Minor, p. 229.

“The vaſt ſlope which at a diſtance we had taken for chalk, was now beheld with wonder, it ſeeming an immenſe frozen caſcade, the ſurface wavy, as of water at once fixed, or in its headlong courſe ſuddenly petrified. Round about us were many high, bare, ſtony ridges; and cloſe by our tent, one with a wide baſis, and a ſlender rill of water, clear, ſoft, and warm, running in a ſmall channel on the top. A woman was waſhing linen in it, with a child at her back; and beyond were cabins of the Turcomans, ſtanding diſtinct, much nearer than any we had ſeen, each with poultry feeding, and a fence of reeds in front.

“It is an old obſervation, that the country about the Mæander, the ſoil being light and friable, and full of ſalts generating inflammable matter, was undermined by fire and water. Hence it abounded in hot ſprings, which, after paſſing under-ground from the reſervoirs, appeared on the mountain, or were found bubbling up in the plain or in the mud of the river: and hence it was ſubject to frequent earthquakes, the nitrous vapour compreſſed in the cavities, and ſublimed by heat or fermentation, burſting its priſon with loud exploſions, agitating the atmoſphere, and ſhaking the earth and waters with a violence as extenſive as deſtructive; and hence, moreover, the peſtilential grottos, which had ſubterraneous communications with each other, derived their noiſome effluvia; and ſerving as ſmaller vents to theſe furnaces or hollows, were regarded as apertures of hell, as paſſages for deadly fumes riſing up from the realms of Pluto. One or more of the mountains perhaps has burned. It may be ſuſpected, that the ſurface of the country has in ſome places been formed from its own bowels; and in particular, it ſeems probable, that the hill of Laodicea was originally an eruption.

“The hot waters of Hierapolis have produced that moſt extraordinary phænomenon, the cliff, which is one entire incruſtation. They were anciently renowned for this ſpecies of transformation. It is related, they changed ſo eaſily, that being conducted about the vineyards and gardens, the channels became long fences, each a ſingle ſtone. They produced the ridges by our tent. The road up to the ruins, which appears as a wide and high cauſeway, is a petrification; and overlooks many green ſpots, once vineyards and gardens ſeparated by partitions of the ſame material. The ſurface of the flat, above the cliff, is rough with ſtone and with channels, branching out in various directions, a large pool overflowing and feeding the numerous rills, ſome of which ſpread over the ſlope as they deſcend, and give to the white ſtony bed a humid look, reſembling ſalt or driven ſnow when melting. This cruſt, which has no taſte or ſmell, being an alkaline, will ferment with acids; and Picenini relates, that trial of it had been made with ſpirit of vitriol. The waters, though hot, were uſed in agriculture.

“Tamerlane, when he invaded this country, encamped for the ſummer at Tanguzlik, where many of his men were deſtroyed by drinking of a ſpring which ſtagnated and petrified. The Turkiſh name Pambouk ſignifies *cotton*; and, it has been ſaid, refers to the whiteneſs of the incruſtation.

“The ſhepherd-poet of Smyrna, after mentioning a cave in Phrygia ſacred to the Nymphs, relates, that there Luna had once deſcended from the ſky to Endymion, while he was ſleeping by his herds; that marks of their bed were then extant under the oaks; and that in the thickets round it the milk of cows had been ſpilt, which men ſtill behold with admiration (for ſuch was the appearance if you ſaw it very far off); but that from thence flowed clear or warm water, which in a little while concreted round about the channels, and formed a ſtone pavement. The writer deſcribes the cliff of

Hierapolis, if I miſtake not, as in his time; and has added a local ſtory, current when he lived. It was the genius of the people to unite fiction with truth; and, as in this and other inſtances, to dignify the tales of their mythology with fabulous evidence taken from the natural wonders in which their country abounded.

“ We aſcended in the morning to the ruins, which are on a flat, paſſing by ſepulchres with inſcriptions, and entering the city from the eaſt. We had ſoon the theatre on our right hand, and the pool between us and the cliff. Oppoſite to it, near the margin of the cliff, is the remains of an amazing ſtructure, once perhaps baths, or, as we conjectured, a gymnaſium; the huge vaults of the roof ſtriking horror as we rode underneath. Beyond it is the mean ruin of a modern fortreſs; and farther on are maſſive walls of edifices, ſeveral of them leaning from their perpendicular, the ſtones diſtorted, and ſeeming every moment ready to fall; the effects and evidences of violent and repeated earthquakes. In a receſs of the mountain on the right hand is the area of a ſtadium. Then again ſepulchres ſucceed, ſome nearly buried in the mountain-ſide, and one a ſquare building, with an inſcription in large letters. All theſe remains are plain, and of the ſtone created by the waters. The ſite has been computed about two hundred paces wide and a mile in length.

“ After taking a general ſurvey, we returned to the theatre, intending to copy inſcriptions, and examine more particularly as we changed our ſtation. We found this a very large and ſumptuous ſtructure, and the leaſt ruined of any we had ſeen. Part of the front is ſtanding. In the heap which lies in confuſion, are many ſculptures well executed in baſſo relievo; with pieces of architrave inſcribed, but disjointed; or ſo encumbered with maſſive marbles, that we could collect from them no information. The character is large and bold, with ligatures. The marble ſeats are ſtill unremoved. The numerous ranges are divided by a low ſemicircular wall, near mid-way, with inſcriptions on the face of it, but moſtly illegible. I copied a ſhort but imperfect one, in which Apollo Archegetes of *The Leader* is requeſted to be propitious. In another compartment, mention is made of the city by its name *Hierapolis*; and on a third is an encomium in verſe, which may be thus tranſlated, “ Hail, golden city Hierapolis, the ſpot to be preferred before any in wide Aſia; revered for the rills of the Nymphs; adorned with ſplendor.” The Nymphs preſided over ſprings and fountains.

After attentively viewing them, and conſidering their height, width, and manner of arrangement, I am inclined to believe that the ancient Aſiatics ſat at their plays and public ſpectacles, like the modern, with their legs croſſed or gathered under them; and it is probable upon carpets.

“ The waters of Hierapolis were ſurpriſingly attempered for tinging wool, with a colour from roots rivalling the more coſtly purples; and were a principal ſource of the riches of the place. The company of dyers is mentioned in the inſcription on the ſquare building among the ſepulchres. That heroum or monument was to be crowned by them with garlands or feſtoons of flowers. The ſprings flowed ſo copiouſly, that the city was full of ſpontaneous baths; and Apollo, the tutelar deity of the Hierapolitans, with Æſculapius and Hygiéa, on their medals, bear witneſs to the medicinal virtues which they poſſeſs. The people, in ſome of their inſcriptions, are ſtyled the *moſt ſplendid*, and the ſenate the *moſt powerful*.

“ The pool before the theatre has been a bath, and marble fragments are viſible at the bottom of the water, which is perfectly tranſparent, and of a briny taſte.

“ Hierapolis was noted, beſides its hot waters, for a plutonium. This was an opening in a ſmall brow of the adjacent mountain, capable of admitting a man, and very deep, with a ſquare fence before it, incloſing about half an acre; which ſpace was filled with black thick miſt, ſo that the bottom could be ſcarcely diſcerned. The air, to thoſe who approached it, was innocent on the outſide of the fence, being clear of the miſt in ſerene weather, it remaining then within the boundary; but there death abode. Bulls, as at Nyſa, dropt down, and were dragged forth without life; and ſome ſparrows which Strabo let fly inſtantly fell ſenſeleſs. But eunuchs, the prieſts of Magna Mater, or Cybele, could go in quite to the aperture, lean forward, or enter it unharmed; but they held their breath, as their viſages teſtified, and ſometimes until in danger of ſuffocation. Strabo, the relater, was in doubt whether all eunuchs could do this, or only they of the temple; and whether they were preſerved by Divine Providence, as in caſes of enthuſiaſm, or were poſſeſſed of ſome powerful antidotes. But it was likely this miſt was the condenſed ſteam of the hot waters, made noxious by the qualities of the ſoil; and that the whole ſecret of the prieſts conſiſted in carrying their faces high in the air, as another ſpectator has obſerved they always did; and in avoiding reſpiration when they ſtooped. I had hoped the deſcription of this ſpot would have enabled me to find it, but I ſearched about for it unſucceſsfully.

“ We deſcended to our tent at the approach of evening, by a ſteep track down the cliff, beginning beyond the pool, in which we alſo bathed with pleaſure, on the ſide next the gymnaſium. Our way was often rough and ſlippery, reſembling ice, and our horſes with difficulty preſerved their footing. When arrived at our tent, I renewed my enquiries for the plutonium; and an old Turk, with a beard as white as ſnow, told me he knew the place, that it was often fatal to their goats; and accounting for the effect, ſaid, it was believed to be the habitation of a dæmon or evil ſpirit. We aſcended again early in the morning to the theatre, where he had promiſed to join us; and a live fowl was intended to be the martyr of experiment.” But our author was interrupted by ſome banditti, and obliged to leave Hierapolis in haſte.

HIERARCHY, among divines, denotes the ſubordination of angels.

Some of the rabbins reckon four, others ten, orders or ranks of angels; and give them different names according to their different degrees of power and knowledge.

HIERARCHY, likewiſe denotes the ſubordination of the clergy, eccleſiaſtical polity, or the conſtitution and government of the Chriſtian church conſidered as a ſociety.

HIERES, the name of ſome ſmall iſlands lying near the coaſt of Provence in France, oppoſite to the towns of Hieres and Toulon, where the Engliſh fleet lay many months in 1744, and blocked up the French and Spaniſh fleets in the harbour of Toulon.

Hieres, a town of Provence in France, ſeated on the Mediterranean ſea. It is a pretty little town, and was formerly a colony of the Marſilians ; and pilgrims uſed to embark here for the holy land. But its harbour being now choaked up, it is conſiderable only for its ſalt works. E. Long. 6. 13. N. Lat. 43. 7.

HIERO I. and II. kings of Syracuſe. See SYRACUSE.

HIEROCLES, a cruel perſecuter of the Chriſtians, and a violent promoter of the perſecution under Diocleſian, flouriſhed in 302. He wrote ſome books againſt the Chriſtian religion ; in which he pretends ſome inconſiſtencies in the Holy Scriptures, and compares the miracles of Apollonius Tyanæus to thoſe of our Saviour. He was refuted by Lactantius and Euſebius. The remains of his works were collected into one volume octavo, by biſhop Pearſon ; and publiſhed in 1654, with a learned diſſertation prefixed to the work.

Hierocles, a Platonic Philoſopher of the fifth century, taught at Alexandria, and was admired for his eloquence. He wrote ſeven books upon Providence and Fate ; and dedicated them to the philoſopher Olympiodorus, who by his embaſſies did the Romans great ſervices under the emperors Honorius and Theodoſius the younger. But theſe books are loſt, and we only know them by the extracts in Photius. He wrote alſo a commentary upon the golden verſes of Pythagoras ; which is ſtill extant, and has been ſeveral times publiſhed with thoſe verſes.

HIEROGLYPHICS, in antiquity, myſtical characters, or ſymbols, in uſe among the Egyptians, and that as well in their writings as inſcriptions ; being the figures of various animals, the parts of human bodies, and mechanical inſtruments. The word is compoſed of the Greek ιερος *ſacer*, "holy," and γλυφειν *ſculpere*, "to engrave ;" it being the cuſtom to have the walls, doors, &c. of their temples, obeliſks, &c. engraven with ſuch figures.

Hieroglyphics are properly emblems or ſigns of divine, ſacred, or ſupernatural things, by which they are diſtinguiſhed from common ſymbols, which are ſigns of ſenſible and natural things.

Hermes Triſmegiſtus is commonly eſteemed the inventor of hieroglyphics : he firſt introduced them into the heathen theology, from whence they have been tranſplanted into the Jewiſh and Chriſtian.

Sacred things, ſays Hippocrates, ſhould only be communicated to ſacred perſons. Hence it was that the ancient Egyptians communicated to none but their kings and prieſts, and thoſe who were to ſucceed to the prieſthood and the crown, the ſecrets of nature, and the ſecrets of their morality and hiſtory ; and this they did by a kind of cabbala, which, at the ſame time that it inſtructed them, only amuſed the reſt of the people. Hence the uſe of hieroglyphics, or myſtic figures, to veil their morality, politics, &c. from profane eyes. This author, it may be obſerved, and many others, do not keep to the preciſe character of a hieroglyphic, but apply it to profane as well as divine things.

Hieroglyphics are a kind of real characters, which do not only denote, but in ſome meaſure expreſs, the things. Thus, according to Clemens Alexandrinus, Strom. v. a lion is the hieroglyphic of ſtrength and fortitude ; a bullock, of agriculture ; a horſe, of liberty ; a ſphinx, of ſubtilty, &c.

Such is the opinion that has generally been embraced, both by ancient and modern writers, of the origin and uſe of hieroglyphics. It has been almoſt uniformly maintained, that they were invented by the Egyptian prieſts in order to conceal their wiſdom from the knowledge of the vulgar ; but the late biſhop Warburton hath, with much ingenuity and learning, endeavoured to ſhow that this account is erroneous.

According to this writer, the firſt kind of hieroglyphics were mere pictures, becauſe the moſt natural way of communicating our conceptions by marks or figures was by tracing out the images of things ; and this is actually verified in the caſe of the Mexicans, whoſe only method of writing their laws and hiſtory was by this picture-writing. But the hieroglyphics invented by the Egyptians were an improvement on this rude and inconvenient eſſay towards writing, for they contrived to make them both pictures and characters. In order to effect this improvement, they were obliged to proceed gradually, by firſt making the principal circumſtance of the ſubject ſtand for the whole ; as in the hieroglyphics of Horapollo, which repreſent a battle of two armies in array by two hands, one holding a ſhield and the other a bow : then putting the inſtrument of the thing, whether real or metaphorical, for the thing itſelf, as an eye and ſceptre to repreſent a monarch, a ſhip and pilot the governor of the univerſe, &c. : and finally, by making one thing ſtand for or repreſent another, where their obſervations of nature or traditional ſuperſtitions led them to diſcover or imagine any reſemblance : thus, the univerſe was deſigned by a ſerpent in a circle, whoſe variegated ſpots denoted the ſtars ; and a man who had nobly ſurmounted his misfortunes, was repreſented by the ſkin of the hyæna, becauſe this was ſuppoſed to furniſh an invulnerable defence in battle.

The Chineſe writing, he obſerves, was the next kind of improvement in the uſe of hieroglyphics. The Egyptians joined characteriſtic marks to images ; the Chineſe threw out the images and retained only the contracted marks, and from theſe marks proceeded letters. The general concurrence of different people in this method of recording their thoughts can never be ſuppoſed to be the effect of imitation, ſiniſter views, or chance ; but muſt be conſidered as the uniform voice of nature ſpeaking to the rude conceptions of mankind : for not only the Chineſe of the Eaſt, the Mexicans of the Weſt, and the Egyptians of the South, but the Scythians likewiſe of the North, and the intermediate inhabitants of the earth, *viz.* the Indians, Phœnicians, Ethiopians, &c. uſed the ſame way of writing by picture and hieroglyphic.

The biſhop farther ſhows, that the ſeveral ſpecies of hieroglyphic writing took their riſe from nature and neceſſity, and not from choice and artifice, by tracing at large the origin and progreſs of the art of ſpeech. He proceeds to ſhow how in proceſs of time the Egyptian hieroglyphics came to be employed for the vehicle of myſtery. They uſed their hieroglyphics two ways ; the one more ſimple, by putting the part for the whole, which was the curiologic hieroglyphic ; and the other more artificial, by putting one thing of reſembling qualities for another, called the *tropical hieroglyphic* : thus

Hieroglyphics.

thus the moon was ſometimes repreſented by a half circle and ſometimes by a cynocephalus. They employed their proper hieroglyphics to record openly and plainly their laws, policies, public morals, and hiſtory, and all kinds of civil matters: this is evident from their obeliſks, which were full of hieroglyphic characters, deſigned to record ſingular events, memorable actions, and new inventions: and alſo from the celebrated inſcription on the temple of Minerva at Sais, where an infant, an old man, a hawk, a fiſh, and a river-horſe, expreſſed this moral ſentence; "All you who come into the world and go out of it, know this, that the gods hate impudence." However, the tropical hieroglyphics which were employed to divulge, gradually produced ſymbols which were deſigned to ſecrete or conceal: thus Egypt was ſometimes expreſſed by the crocodile, ſometimes by a burning cenſer with a heart upon it; where the ſimplicity of the firſt repreſentation and the abſtruſeneſs of the latter ſhow, that the one was a tropical hieroglyphic for communication, and the other a tropical ſymbol invented for ſecrecy.

Enigmatic ſymbols were afterwards formed by the aſſemblage of different things, or of their properties that were leſs known; and though they might have been intelligible at firſt, yet when the art of writing was invented, hieroglyphics were more generally diſuſed, the people forgot the ſignification of them, and the prieſts, retaining and cultivating the knowledge of them becauſe they were the repoſitories of their learning and hiſtory, at length applied them to the purpoſe of preſerving the ſecrets of their religion.

Symbols were the true original of animal worſhip in Egypt, as Sir John Marſham conjectured, *Can. Chron.* p. 58. becauſe in theſe hieroglyphics was recorded the hiſtory of their greater deities, their kings, and lawgivers, repreſented by animals and other creatures. The ſymbol of each god was well known and familiar to his worſhippers, by means of the popular paintings and engravings on their temples and other ſacred monuments; ſo that the ſymbol preſenting the idea of the god, and that idea exciting ſentiments of religion, it was natural for them, in their addreſſes to any particular god, to turn to his repreſentative mark or ſymbol; eſpecially when we conſider farther, that the Egyptian prieſts feigned a divine original for hieroglyphic characters, in order to increaſe the veneration of the people for them. Theſe would of courſe bring on a relative devotion to theſe ſymbolic figures, which, when it came to be paid to the living animal, would ſoon terminate in an ultimate worſhip.

Another conſequence of the ſacredneſs of the hieroglyphic characters was, that it diſpoſed the more ſuperſtitious to engrave them on gems, and wear them as amulets or charms. This magical abuſe ſeems not to have been much earlier than the eſtabliſhed worſhip of the god Serapis, which happened under the Ptolemies, and was firſt brought to the general knowledge of the world by certain Chriſtian heretics and natives of Egypt, who had mixed a number of Pagan ſuperſtitions with their Chriſtianity. Theſe gems, called *abraxas*, are frequently to be met with in the cabinets of the curious, and are engraven with all kinds of hieroglyphic characters. To theſe abraxas ſucceeded the taliſmans.

Hierogrammatiſts
||
Hierophantes.

HIEROGRAMMATISTS, *(Hierogrammatei)*, i. e. *holy regiſters*, were an order of prieſts among the ancient Egyptians, who preſided over learning and religion. They had the care of the hieroglyphics, and were the expoſitors of religious doctrines and opinions. They were looked upon as a kind of prophets; and it is pretended, that one of them predicted to an Egyptian king, that an Iſraelite (meaning Moſes), eminent for his qualifications and atchievements, would leſſen and depreſs the Egyptian monarchy.—The hierogrammatei were always near the king, to aſſiſt him with their informations and counſels. The better to fit them for this, they made uſe of the ſkill and knowledge they had acquired in the ſtars and the motions of the heavenly lights, and even of the writings of their predeceſſors, wherein their functions and duties were delivered. They were exempted from all civil employments, were reputed the firſt perſons in dignity next the king, and bore a kind of ſceptre in form of a ploughſhare.——After Egypt became a province of the Roman empire, the hierogrammatei ſunk into neglect.

HIEROMANCY, in antiquity, that part of divination which predicted future events from obſerving the various things offered in ſacrifice. See DIVINATION and SACRIFICE.

HIEROMNEMON, among the ancient Greeks, ſignified a delegate choſen by lot, and ſent to the great council of the Amphictyons, where he was to take care of what concerned religion. The hieromnemonies were reckoned more honourable than the other members of that aſſembly, the general meetings of which were always ſummmoned by them, and their names were prefixed to the decrees made by that council.

HIEROMNEMON (compoſed of ιερος "ſacred," and μνημων "one who advertiſes or puts in mind of," an officer in the ancient Greek church, whoſe principal function was to ſtand behind the patriarch at the ſacraments, ceremonies, &c. and ſhow him the prayers, pſalms, &c. which he was to rehearſe. He alſo clothed the patriarch in his pontifical robes, and aſſigned the places of all thoſe who had a right to be around him when ſeated on his throne, as the maſter of the ceremonies now does to the pope.

HIERONYMUS. See JEROME.

HIEROPHANTES, or HIEROPHANTA, (from ιερος *holy*, and φαινω *I appear)*, in antiquity, a prieſt among the Athenians.

The hierophantes was properly the chief perſon that officiated in the eleuſinia, that great ſolemnity ſacred to Ceres.

This office was firſt executed by Eumolpus, and continued in his family for 1200 years, though when any perſon was appointed to this dignity he was required alway to live in celibacy.

St Jerome ſays, that the hierophantes extinguiſhed the fire of luſt by drinking cicuta or the juice of hemlock, or even by making themſelves eunuchs. Apollodorus obſerves, that it was the hierophantes who inſtructed perſons initiated into their religion in the myſteries and duties thereof, and that it was hence he derived his name; for the ſame reaſon he was called *prophetes*, "the prophet." He had officers under him to do the ſame thing, or to aſſiſt him therein, who were alſo called *prophetes* and *exeges,, i. e.* "explainers of divine things."

To the hierophantes it belonged to dreſs and adorn the ſtatues of the gods, and to bear them in proceſſions and ſolemn ceremonies.

HIEROPHYLAX, an officer in the Greek church, who was guardian or keeper of the holy utenſils, veſtments, &c. anſwering to our ſacriſta or veſtry-keeper.

HIGH, a term of relation, importing one thing's being ſuperior or above another: thus we ſay, a *high* mountain, the *high* court of parliament, *high* relievo, &c.

HIGH, in muſic, is ſometimes uſed in the ſame ſenſe with *loud*, and ſometimes in the ſame ſenſe with *acute*.

HIGH Dutch, is the German tongue in its greateſt purity, &c. as ſpoken in Miſnia, &c.

HIGH Operation, in chirurgery, is a method of extracting the ſtone; thus called, becauſe the ſtone is taken out at the upper part of the bladder. See SURGERY.

HIGH Places, were eminences on which the heathens uſed to worſhip their gods, choſen for that purpoſe as being ſuppoſed to be nearer heaven their conſtant reſidence. The Jews are frequently blamed for their attachment to high-places, after the manner of the Gentiles; though their *proſeuchæ* were frequently upon mountains with groves planted about them. Where high-places are reprobated in ſcripture, therefore, we ſhould underſtand them as abuſed and proſtituted to idolatrous purpoſes. Before the temple was built, there was indeed nothing in the high-places very contrary to the law, provided God only was adored there, and that no incenſe or victims were offered to idols. Under the judges they ſeem to have been tolerated; and Samuel offered ſacrifices in ſeveral places beſides the tabernacle, where the ark was not preſent. Even in David's time, they ſacrificed to the Lord at Shilo, Jeruſalem and Gibeon; but after the temple was built, and a place prepared for the fixed ſettlement of the ark, it was no more allowed of to ſacrifice out of Jeruſalem. Solomon, in the beginning of his reign, went a pilgrimage to Gibeon; but from that time we ſee no lawful ſacrifices offered out of the temple.

HIGH Prieſt. See PONTIFEX and PRIEST.

HIGH Way, a free paſſage for the king's ſubjects; on which account it is called the *king's high way*, tho' the freehold of the ſoil belong to the owner of the land. Thoſe ways that lead from one town to another, and ſuch as are drift or cart ways, and are for all travellers in great roads, or that communicate with them, are high ways only; and as to their reparation, are under the care of ſurveyors.

HIGH-WAY-MEN, are robbers on the high way; for the apprehending and taking of whom, a reward of 40l. is given by the ſtatute of 4 and 5 W. & M. to be paid within a month after conviction by the ſheriff of the county; to which the ſtatute 8 Geo. II. cap. 16. ſuperadds 10l. to be paid by the hundred indemnified by ſuch taking.

HIGHMAN FERRERS, an ancient borough of Northamptonſhire in England, which has its name from the family of the Ferrers, to whom it formerly belonged, and who had a caſtle in its neighbourhood. It ſends one member to parliament. E. Long. 1. 40. N. Lat. 52. 20.

HIGHGATE, a village five miles north of London. It has its name from its high ſituation, and from a gate ſet up there about 400 years ago, to receive toll for the biſhop of London, when the old miry road from Gray's-inn Lane to Barnet was turned through the biſhop's park. There was a hermitage where the chapel now ſtands; and one of the hermits cauſed a cauſeway to be made between Highgate and Iſlington, with gravel dug out of the top of the hill, where there is now a pond. Near the chapel, in 1562, lord chief baron Cholmondely built and endowed a free ſchool, which was enlarged in 1570 by Edwin Sandys biſhop of London.—This village is a noted and airy retirement for the gentry and wealthy citizens; and is a place of good accommodation, beſides its affording a delightful and pleaſant proſpect over the city and adjacent country.

HIGHLANDERS, a general appellation for the inhabitants of the mountainous parts of any country. In Britain, the name is appropriated to the people who inhabit the mountainous parts of Scotland, to the north and north-weſt, including thoſe of the Hebrides or Weſtern Iſles.—They are a branch of the ancient Celtæ; and undoubtedly the deſcendants of the firſt inhabitants of Britain, as appears from the many monuments of their language ſtill retained in the moſt ancient names of places in moſt parts of the iſland. The Highlanders, or, as they are often termed by ancient authors, the *Caledonians*, were always a brave, warlike, and hardy race of people; and, in the remoteſt times, ſeem to have poſſeſſed a degree of refinement in ſentiment and manners then unknown to the other nations that ſurrounded them. This appears not only from their own traditions and poems; but alſo from the teſtimony of many ancient authors. This civilization was probably owing in a great meaſure to the order of the bards, or Druids, and ſome other inſtitutions peculiar to this people.

The ancient Highlanders lived in the hunting ſtate till ſome time after the era of Fingal, who was one of their kings towards the cloſe of the third century. For ſome ages after that, they turned their chief attention to the paſtoral life, which afforded a leſs precarious ſubſiſtence. Till of late, agriculture in moſt parts of the Highlands made but little progreſs.

The Highlanders always enjoyed a king and government of their own, till Kenneth M'Alpine (anno 845), after having ſubdued the Pictiſh kingdom, transferred thither the ſeat of royalty. This event proved very unfavourable to the virtues of the Highlanders, which from this period began to decline. The country, no longer awed by the preſence of the ſovereign, fell into anarchy and confuſion. The chieftains began to extend their authority, to form factions, and to foment diviſions and feuds between contending clans. The laws were either too feeble to bind them, or too remote to take notice of them. Hence ſprung all thoſe evils which long diſgraced the country, and diſturbed the peace of its inhabitants. Robbery or plunder, providing it was committed on any one of an adverſe clan or tribe, was countenanced and authoriſed; and their repriſals on one another were perpetual. Thus quarrels were handed down from one generation to another, and the whole clan were bound in honour to eſpouſe the cauſe of every individual that belonged to it. By this means the genius of the people was greatly altered; and the Highlanders of a few ages back were almoſt as remarkable for their irregular and diſorderly way of life as their predeceſſors were for their civilization and virtue. It is from not attending to this diſtinction between the ancient Highlanders and their poſterity in latter times, that many have doubted the exiſtence of thoſe exalted virtues aſcribed by their poets to the more ancient inhabitants of the country. But now that the power of the chieftains is again aboliſhed, law eſtabliſhed, and property ſecured, the genius of the people (where it is not hindered by ſome other extraneous cauſe) begins again to ſhow itſelf in its genuine colours; and many of their ancient virtues begin to ſhine with conſpicuous luſtre. Juſtice, generoſity, honeſty, friendſhip, peace, and love, are perhaps no where more cultivated than among this people. But one of the ſtrongeſt features which marked the character of the Highlanders in every age, was their hoſpitality and benevolence to ſtrangers. At night the traveller was always ſure to find a hearty welcome in whatever houſe he ſhould go to; and the hoſt thought himſelf happier in giving the entertainment than the gueſt in receiving it. Even with regard to their enemies, the laws of hoſpitality were obſerved with the moſt ſacred regard. They who fought againſt each other in the day, could in the night feaſt and even ſleep together in the ſame houſe. From the ſame principle they were, in moſt other caſes ſo faithful to their truſt, that they rarely betrayed any confidence repoſed in them. A promiſe they thought as binding as an oath, and held it equally inviolable and ſacred.

The Caledonians in all ages have been much addicted to poetry and muſic. The poems of Oſſian, ſo univerſally repeated, and ſo highly eſteemed by every Highlander, are a ſtrong proof of the early proficiency of this people in the poetical art. Even to this day, notwithſtanding the many diſadvantages they labour under, the moſt illiterate of either ſex diſcover frequently a genius for poetry, which often breaks forth in the moſt natural and ſimple ſtrains, when love, grief, joy, or any other ſubject of ſong, demands it. Wherever their circumſtances are ſo eaſy as to allow them any reſpite from toil, or any cheerfulneſs of ſpirits, a good portion of their time, eſpecially of the winter-nights, is ſtill devoted to the ſong and tale. This laſt ſpecies of compoſition is chiefly of the novel kind, and is handed down by tradition like their poems. It was the work of the bards; and proved while they exiſted, no contemptible entertainment. But ſince the extinction of that order, both the Gaelic poems and tales are in a great meaſure either loſt or adulterated —The genius and character of the Gaelic poetry is well known. It is tender, ſimple, beautiful, and ſublime.

Among the ancient Highlanders, the harp was the chief inſtrument of muſic. It ſuited the mildneſs of their manners, and was well adapted to the peace and uiet which they enjoyed under their own kings. In a later period, however, when the conſtant quarrels of their chiefs, and the endleſs feuds of contending clans turned all their thoughts to war, it was forced to give place to the bag-pipe, an inſtrument altogether ot the martial kind, and therefore well ſuited to the ſtate of the country at that time. But ever ſince the cauſe which had brought this inſtrument in vogue has ceaſed to operate, the attention to it has been on the decline; ſo that the harp, with very little encouragement, might again reſume the ſeat from which it was once expelled. —The moſt, and eſpecially the oldeſt of the Highland muſic, having been compoſed to the harp, is of a ſoft, tender, and elegiac caſt, as beſt ſuited to the genius of that inſtrument. Theſe pieces are generally expreſſive of the paſſion of love and grief. Other pieces, which were compoſed in their ſtate of war, and adapted to a different inſtrument, are altogether bold and martial. And many are of a ſprightly and cheerful caſt, the offspring of mirth, and the ſport of fancy in the ſeaſon of feſtivity. Many of theſe laſt are of the chorus kind; and are ſung in almoſt all the exerciſes in which a number of people are engaged, ſuch as rowing, reaping, fulling, &c. The time of theſe pieces is adapted to the exerciſes to which they are reſpectively ſung. They greatly forward the work and alleviate the labour. The particular muſic which is generally uſed by the Highlanders in their dances is well known by the name of *Strathſpey reels*.

The language of the Highlanders is ſtill the Gaelic: which, with many of their cuſtoms and manners has been ſecured to them by their mountains and faſtneſſes, amidſt the many revolutions which the reſt of the iſland has undergone in ſo long a courſe of ages. The Gaelic ſeems to be the oldeſt and pureſt dialect which remains of the Celtic, as appears from its approaching ~~the~~ neareſt to the names of places, &c which that language left ~~in~~ moſt countries where it prevailed, and from its moſt obvious affinity to thoſe tongues, ancient or modern, which have been in any meaſure derived from the old Celtic. The Gaelic has all the marks of an original and primitive language. Moſt of the words are expreſſive of ſome property or quality of the objects which they denote. This, together with the variety of its ſounds (many of which, eſpecially of thoſe that expreſs the ſoft and mournful paſſions, are peculiar to itſelf), renders it highly adapted for poetry. It is generally allowed to have been the language of court, in Scotland till the reign of Malcom Canmore. The Gaelic epithet of *Can more*, or “large head,” by which this king is diſtinguiſhed, ſeems to intimate ſo much. In ſome particular parliaments at leaſt, it was ſpoken much later, as in that held by Robert the Bruce at Ardchattan. That it has been formerly a good deal cultivated, appears from the ſtyle and complexion of its poems and tales, and from ſeveral ancient MSS, that have come down to the preſent times. To ſtrangers the Gaelich as a forbiding aſpect, on account of the number of its quieſcent conſonants (which are retained to mark the derivation of words and their variation in caſe and tenſe), but its ſound is abundantly muſical and harmonious; and its genius ſtrong and maſculine. Its alphabet conſiſts of 18 letters of which one is an aſpirate, 12 are conſonants, and five are vowels.

The Highlanders are beginning of late to apply to learning, agriculture, and eſpecially to commerce, for which their country, every where indented with arms of the ſea, is peculiarly favourable. Cattle is the chief ſtaple of the country; but it produces more grain than would ſupply its inhabitants, if ſo much of it were not conſumed in whiſky. The natives are beginning to avail themſelves of their mines, woods, wool, and fiſheries; and by a vigorous application, with the due encouragement of government, may become a proſperous and uſeful people.

The Highlanders are of a quick and penetrating genius, ſtrongly tinctured with a curioſity or thirſt of knowledge, which diſpoſes them to learn any thing very readily. They are active and induſtrious, where oppreſſion does not diſcourage them by ſecluding even the hope of thriving. They are remarkably bold and adventurous, which qualifies them for being excellent ſeamen and ſoldiers. They are generally of a middle ſize, rather above it than otherwiſe; their eyes are briſk and lively, their features diſtinctly marked, and their perſons tight and well made. Their countenance is open and ingenuous, and their temper frank and communicative.

HIGHMORE, (Joſeph, Eſq;) an eminent painter, was borne in the pariſh of St James's, Garlickhithe, London, June 13, 1692, being the third ſon of Mr Edward Highmore, a coal-merchant in Thames-ſtreet. Having ſuch an early and ſtrong inclination to painting that he could think of nothing elſe with pleaſure, his father endeavoured to gratify him in a propoſal to his uncle, who was ſerjeant-painter to king William, and with whom Mr (afterwards Sir James) Thornhill had ſerved his apprenticeſhip. But this was afterwards for good reaſons declined, and he was articled as clerk to an attorney, July 18, 1707; but ſo much againſt his own declared inclination, that in about three years he began to form reſolutions of indulging his natural diſpoſition to his favourite art, having continually employed his leiſure hours in deſigning, and in the ſtudy of geometry, perſpective, architecture, and anatomy, but without any inſtructors except books. He had afterwards an opportunity of improving himſelf in anatomy, by attending the lectures of Mr Cheſelden, beſides entering himſelf at the painters academy in Great Queen-ſtreet, where he drew 10 years, and had the honour to be particularly noticed by Sir Godfrey Kneller, who diſtinguiſhed him by the name of "the young Lawyer." On June 13th 1714, his clerkſhip expired; and on March 26th 1715, he began painting as a profeſſion, and ſettled in the city. In the ſame year Dr Brook Taylor publiſhed his "Linear Perſpective; or a new method of repreſenting juſtly all manner of objects as they appear to the eye in all ſituations." On this complete and univerſal theory our artiſt grounded his ſubſequent practice; and it has been generally allowed, that few, if any of the profeſſion at that time, were ſo thorough maſters of that excellent but intricate ſyſtem. In 1716, he married Miſs Suſanna Hiller, daughter and heireſs of Mr Anthony Hiller of Effingham in Surrey; a young lady in every reſpect worthy of his choice. For Mr Cheſelden's "Anatomy of the human body," publiſhed in 1722, he made drawings from the real ſubjects at the time of diſſection, two of which were engraved for that work, and appeared, but without his name, in tables xii. and xiii. In the ſame year on the exhibition of "The Conſcious Lover," written by Sir Richard Steele, Mr Highmore addreſſed a letter to the author on the limits of filial obedience, pointing out a material defect in the character of Bevil, with that clearneſs and preciſion for which, in converſation and writing, he was always remarkable, as the pencil by no means engroſſed his whole attention. His reputation and buſineſs increaſing, he took a more conſpicuous ſtation, by removing to a houſe in Lincoln's-Inn Fields, in March 1723-4; and an opportunity ſoon offered of introducing him advantageouſly to the nobility, &c. by his being deſired, by Mr Pine the engraver, to make the drawings for his prints of the knights of the bath, on the revival of that order in 1725. In conſequence, ſeveral of the knights had their portraits alſo by the ſame hand, ſome of them whole lengths; and the duke of Richmond, in particular, was attended by his three eſquires, with a perſpective view of king Henry VIIth's chapel. This capital picture is now at Godwood. And our artiſt was ſent for to St James's by George I. to draw the late duke of Cumberland, from which Smith ſcraped a mezzotinto.

In 1728, Mr Hawkins Browne, then of Lincoln's-Inn, who had ever a juſt ſenſe of his talents and abilities, addreſſed to him a poetical epiſtle "On Deſign and Beauty;" and, ſome years after, an Elegant Latin Ode, both now collected in his poems. In the ſummer of 1732, Mr Highmore viſited the continent, in company with Dr Pemberton, Mr Benjamin Robins, and two other friends, chiefly with a view of ſeeing the gallery of pictures belonging to the elector Palatine at Duſſeldorp, collected by Rubens, and ſuppoſed the beſt in Europe. At Antwerp alſo he had peculiar pleaſure in contemplating the works of his favourite maſter. In their return they viſited the principal towns in Holland. In 1734, he made a like excurſion, but alone, to Paris, where he received great civilities from his countrymen then there, particularly the duke of Kingſton, Dr Hickman (his tutor), Robert Knight, Eſq; (the late caſhier), &c. Here he had the ſatiſfaction of being ſhown, by cardinal de Polignac, his famous group of antique ſtatues, the court of Lycomedes, then juſt brought from Rome, and ſince purchaſed by the king of Pruſſia, and deſtroyed at Charlottenbourg in 1760 by the Ruſſians. In 1742, he had the honour to paint the late prince and princeſs of Wales for the duke of Saxe Gotha; as he had ſome years after the late queen of Denmark for that court. The publication of "Pamela," in 1744. gave riſe to a ſet of paintings by Mr Highmore, which were engraved by two French engravers, and publiſhed by ſubſcription in 1745. In the ſame year he painted the only original of the late general Wolfe, then about 18. His Pamela introduced him to the acquaintance and friendſhip of the excellent author whoſe picture he drew, and for whom he painted the only original of Dr Young. In 1750 he had the misfortune to loſe his wife. On the firſt inſtitution of the academy of painting, ſculpture, &c. in 1753, he was elected one of the profeſſors; an honour which, on account of his many avocations, he deſired to decline. In 1754 he publiſhed "A critical examination of thoſe two Paintings [by Rubens] on the cieling of the Banqueting-houſe at Whitehall, in which Architecture is introduced, ſo far as relates to Perſpective; together with the Diſcuſſion of a Queſtion which has been the Subject of Debate among Painters:" printed in 4to. In the ſolution of this queſtion, he proved that Rubens and ſeveral other great painters were miſtaken in the practice, and Mr Kirby and ſeveral other authors in the theory. And in the 17th volume of the "Monthly Review," he animadverted (anonymouſly) on Mr Kirby's unwarrantable treatment of Mr Ware, and detected and expoſed his errors, even when he exults in his own ſuperior ſcience. Of the many portraits which Mr Highmore painted, in a large practice of 46 years (of which ſeveral have been engraved), it is impoſſible and uſeleſs to diſcuſs particulars. Some of the moſt capital in the hiſtorical branch, which was then much leſs cultivated than it is at preſent, ſhall only be mentioned, viz. "Hagar and Iſhmael," a preſent to the Foundling-hoſpital: "The good Samaritan," painted for Mr Shepherd of Campſey Aſh: "The finding of Moſes," purchaſed at his ſale by colonel (now general) Liſter: "The Harlowe family, as deſcribed in Clariſſa," now in the poſſeſſion of Thomas Watkinſon Payler, Eſq; at Heyden in Kent: "Clariſſa," the portrait mentioned in that work: "The Graces unveiling Nature," drawn by memory from Rubens: "The Clementina of Grandiſon, and the queen mother of Edward IV. with her younger ſon, &c. in Weſtminſter-abbey;" the three laſt in the poſſeſſion of his ſon.

In 1761, on the marriage of his daughter to the Rev. Mr Duncombe, ſon to one of his oldeſt friends, he took a reſolution of retiring from buſineſs, and diſpoſing of his collection of pictures, which he did by auction, in March 1762, and ſoon after removed to his ſon-in-law's at Canterbury, where he paſſed the remainder of his life without ever reviſiting the metropolis. But though he had laid down the pencil, he never wanted employment: ſo active and vigorous was his mind, that with a conſtitutional flow of ſpirits, and a reliſh for inſtructive ſociety, he was never leſs "alone than when alone;" and beſides his profeſſional purſuits abovementioned, to philoſophy, both natural and moral, and alſo divinity, he laudably dedicated his time and attention. No man had more clearneſs and preciſion of ideas, or a more ardent deſire to know the truth; and, when known, conſcientiouſly to purſue it. With ſtrong paſſions, ever guided by the ſtricteſt virtue, he had a tender, ſuſceptible heart, always open to the diſtreſſes of his fellow-creatures, and always ready to relieve them. His capital work of the literary kind, was his "Practice and perſpective, on the principles of Dr Brook Taylor, &c." written many years before, but not publiſhed till 1763, when it was printed for Nourſe, in one vol. 4to. This not only evinced his ſcientific knowledge of the ſubject, but removed by its perſpicuity, the only objection that can be made to the ſyſtem of Dr Taylor. It accordingly received from his friends and the intelligent public, the applauſes it deſerved. In 1765 he publiſhed (without his name) "Obſervations on a Pamphlet intituled, 'Chriſtianity not founded on Argument;" in which, after ſhowing that it is a continued irony, and lamenting that ſo ample a field ſhould be offered the author of it for the diſplay of his ſophiſtry; he gives up creeds, articles, and catechiſms, as out-works raiſed by fallible men, and, confining himſelf to the defence of the goſpel, or citadel, ſhows, that pure primitive Chriſtianity, though aſſaulted by infidels, will ever remain impregnable. His opinion of Rubens may be ſeen in the Gentleman's Magazine for 1766, p. 353, under the title of "Remarks on ſome paſſages in Mr Webb's inquiry into the Beauties of Painting, &c." In the ſame year he publiſhed, with only his initials, "J. H." two ſmall volumes of "Eſſays, moral, religious, and miſcellaneous; with a Tranſlation in proſe of Mr Browne's Latin Poem on the Immortality of the Soul," ſelected from a large number written at his leiſure, at differents periods of life. "As ſuch (ſays Dr Hawkeſworth) they do the author great credit. They are not excurſions of fancy, but efforts of thought, and indubitable indications of a vigorous and active mind." In the Gentleman's Magazine for 1769, p. 287, he communicated "A natural and obvious Manner of conſtructing Sun-dials, deduced from the Situation and Motion of the Earth with reſpect to the Sun," explained by a ſcheme. And in that for 1788, p. 526, his remarks on colouring, ſuggeſted by way of a note on the "Epiſtle to an eminent Painter," will ſhow that his talents were by no means impaired at the age of 86. Indeed he retained them to the laſt, and had even ſtrength and ſpirit ſufficient to enable him to ride out daily on horſeback the ſummer before he died. A ſtrong conſtitution, habitual temperance, and conſtant attention to his health in youth as well as in age, prolonged his life, and preſerved his faculties to his 88th year, when he gradually ceaſed to breathe, and, as it were, fell aſleep on March 3. 1780. He was interred in the ſouth aiſle of Canterbury cathedral, leaving one ſon, Anthony, educated in his own profeſſion; and a daughter, Suſanna, mentioned above.

His abilities as a painter appear in his works, which will not only be admired by his contemporaries, but by their poſterity; as his tints, like thoſe of Rubens and Vandyck, inſtead of being impaired, are improved by time, which ſome of them have now withſtood above 60 years. His idea of beauty, when he indulged his fancy, was of the higheſt kind; and his knowledge of perſpective gave him great advantages in family-pieces, of which he painted more than any one of his time. He could take a likeneſs by memory as well as by a ſitting, as appears by his picture of the duke of Lorrain (the late emperor), which Faber engraved; and thoſe of king George II. (in York-aſſembly-room); queen Caroline, the two Miſs Gunnings, &c. Like many other great painters, he had "a poet for his friend," in the late Mr Browne; to which may be added a poem addreſſed to him in 1726, by the Rev. Mr Bunce, at that time of Trinity-hall, Cambridge, who ſucceeded Mr Highmore, and in 1780 was vicar of St Stephen's near Canterbury.

HIGHNESS, a quality or title of honour given to princes.—The kings of England and Spain had formerly no other title but that of *highneſs*; the firſt till the time of James I. and the ſecond till that of Charles V. The petty princes of Italy began firſt to be complimented with the title of *highneſs* in the year 1630.—The duke of Orleans aſſumed the title of *royal highneſs* in the year 1631, to diſtinguiſh himſelf from the other princes of France.

The duke of Savoy, late king of Sardinia, bore the title of *royal highneſs*, on account of his pretenſions to the kingdom of Cyprus. It is ſaid that duke only took the title of *royal highneſs*, to put himſelf above the duke of Florence, who was called *great duke*; but the great duke afterwards aſſumed the title of *royal highneſs*, to put himſelf on a level with the duke of Savoy.

The prince of Conde firſt took the title of *moſt ſerene highneſs*, leaving that of ſimple *highneſs* to the natural princes.

HILARIA, in antiquity, feaſts celebrated every year by the Romans on the 8th of the calends of April, or the 25th of March, in honour of Cybele the mother of the gods.

The hilaria were ſolemnized with great pomp and rejoicing. Every perſon dreſſed himſelf as he pleaſed, and took the marks or badges of whatever dignity or quality he had a fancy for. The ſtatue of the goddeſs was carried in proceſſion through the ſtreets of the city, accompanied by multitudes in the moſt ſplendid attire. The day before the feſtival was ſpent in tears and mourning. Cybele repreſented the earth, which at this time of the year begins to feel the kindly warmth of the ſpring; ſo that this ſudden tranſition from ſorrow to joy was an emblem of the viciſſitude of the ſeaſons which ſucceeded one another.

The Romans took this feaſt originally from the Greeks, who called it αναϐασις, q. d. *aſcenſus*; the eve of that day they ſpent in tears and lamentations, and thence denominated it καταϐασις, *deſcenſus*.

Afterwards, the Greeks took the name ἱλαρια from the Romans; as appears from Photius, in his extract of the life of the philoſopher Iſidore.

Caſaubon maintains, that beſides this particular ſignification, the word hilaria was alſo a general name for any joyful or feſtival day, whether public or private and domeſtic. But Salmaſius does not allow of this.

Triſtan, tom. i. p. 482, diſtinguiſhes between hilaria and hilariæ. The former, according to him, were public rejoicings; and the latter, prayers made in conſequence thereof; or even of any private feaſt or rejoicing, as a marriage, &c. The public laſted ſeveral days; during which, all mourning and funeral ceremonies were ſuſpended.

HILARIUS, an ancient father of the Chriſtian church, who flouriſhed in the 4th century. He was born, as St Jerome informs us, at Poictiers, of a good family; who gave him a liberal education in the Pagan religion, and which he did not forſake till he was arrived at maturity. He was advanced to the biſhopric of Poictiers in the year 355, according to Baronius; and became a moſt zealous champion for the orthodox faith, particulary againſt the Arians, who were at that time gaining ground in France. He aſſembled ſeveral councils there, in which the determinations of the ſynods of Rimini and Seleucia were condemned. He wrote a treatiſe concerning ſynods: and a famous work in 12 books on the Trinity, which is much admired by the orthodox believers. He died in the latter end of the year 367. His works have been many times publiſhed; but the laſt and beſt edition of them was given by the Benedictines at Paris in 1693.

HILARODI, in the ancient muſic and poetry, a ſort of poets among the Greeks, who went about ſinging little gay poems or ſongs, ſomewhat graver than the Ionic pieces, accompanied with ſome inſtrument. From the ſtreets they were at laſt introduced into tragedy, as the magodi were into comedy. They appeared dreſſed in white, and were crowned with gold. At firſt they wore ſhoes; but afterwards they aſſumed the crepida, being only a ſole tied over with a ſtrap.

HILARY-TERM. See TERM

HILDESHEIM, a ſmall diſtrict of Germany, in the circle of Lower Saxony. It lies between the duchies of Lunenburg and Brunſwick; and may be about 25 from eaſt to weſt, and 36 from north to ſouth. It is watered by the rivers Leine and Innerſty. The ſoil is fertile; and its principal places are Peine, Sarſted, Bruggen, and Alveld. Hildeſheim, from whence it takes its name, is governed as an imperial city. Its biſhop is now elector of Cologne.

HILDESHEIM, a ſtrong city of Germany, in Lower Saxony, with a Roman-catholic biſhop's ſee whoſe biſhop is ſovereign. It is a free imperial city, tho' in ſome things dependent on the biſhop. It is a large town well built and fortified. It is divided into the Old Town and the New, which have each their ſeparate council. It is ſeated on the river Irneſt, in E. Long. 10. 0. N. Lat. 52. 17.

HILL, a term denoting any conſiderable eminence on the earth's ſurface. It is ſometimes ſynonymous with the word *mountain*; though generally it denotes only the leſſer eminences, the word *mountain* being particularly applied to the very largeſt. See MOUNTAIN.

HILL (Aaron), a poet of conſiderable eminence, the ſon of a gentleman of Malmeſbury-abbey in Wiltſhire, was born in 1685. His father's imprudence having cut off his paternal inheritance, he left Weſtminſter ſchool at 14 years of age; and embarked for Conſtantinople, to viſit lord Paget the Engliſh ambaſſador there, who was his diſtant relation. Lord Paget received him with ſurprize and pleaſure, provided him a tutor, and ſent him to travel: by which opportunity he ſaw Egypt, Paleſtine, and a great part of the eaſt; and returning home with his noble patron, viſited moſt of the courts of Europe. About the year 1709, he publiſhed his firſt poem intitled Camillus, in honour of the earl of Peterborough who had been general in Spain; and being the ſame year made maſter of Drury-lane theatre, he wrote his firſt tragedy, Elfred, or the fair Inconſtant. In 1710, he became maſter of the opera-houſe in the Hay-market; when he wrote an opera called Rinaldo, which met with great ſucceſs, being the firſt that Mr Handel ſet to muſic after he came to England. Unfortunately for Mr Hill, he was a projector as well as poet, and in 1715 obtained a patent for extracting oil from beech-nuts; which undertaking, whether good or bad, miſcarried after engaging three years of his attention. He was alſo concerned in the firſt attempt to ſettle the colony of Georgia; from which he never reaped any advantage: and in 1728 he made a journey into the Highlands of Scotland, on a ſcheme of applying the woods there to ſhip-building; in which alſo he loſt his labour. Mr Hill ſeems to have lived in perfect harmony with all the writers of his time, except Mr Pope, with whom he had a ſhort paper-war, occaſioned by that gentleman's introducing him in the Duncaid, as one of the competitors for the prize offered by the goddeſs of Dullneſs, in the following lines:

> "Then *Hill* eſſay'd; ſcarce vaniſh'd out of ſight,
> "He buoys up inſtant, and returns to light;
> "He bears no token of the ſabler ſtreams,
> "He mounts far off among the Swans of Thames."

This, though far the gentleſt piece of ſatire in the whole poem, and conveying at the ſame time an oblique compliment, rouſed Mr Hill to take ſome notice of it; which he did by a poem written during his peregrination in the north, intitled, "The progreſs of wit, a caveat for the uſe of an eminent writer;" which he begins with the following eight lines, in which Mr Pope's too well-known diſpoſition is elegantly, yet very ſeverely characterized:

> " Tuneful *Alexis* on the Thames' fair ſide,
> " The Ladies play-thing and the Muſe's pride:
> " With merit popular, and with wit polite,
> " Eaſy tho' vain, and elegant tho' light;
> " Deſiring and deſerving others praiſe,
> " Poorly accepts a Fame he ne'er repays:
> " Unborn to cheriſh, ſneakingly approves;
> " And wants the ſoul to ſpread the worth he loves."

The *ſneakingly approves*, in the couplet, Mr Pope was much affected by: and indeed through their whole controverſy afterwards, in which it was generally thought that Mr Hill had much the advantage, Mr Pope ſeems rather to expreſs his repentance by denying the offence, than to vindicate himſelf ſuppoſing it to have been given. Beſides the above poems, Mr Hill, among many others, wrote one, called *The northern ſtar*, upon the actions of Czar Peter the Great; for which he was ſeveral years afterwards complimented with a gold medal from the empreſs Catharine, according to the Czar's deſire before his death. He likewiſe altered ſome of Shakeſpeare's plays, and tranſlated ſome of Voltaire's. His laſt production was Merope; which was brought upon the ſtage in Drury-lane by Mr Garrick. He died on the 8th of February 1749, as it is ſaid, in the very minute of the earthquake; and after his deceaſe four volumes of his works in proſe and verſe were publiſhed in octavo, and his dramatic works in two volumes.

Hill (Sir John), a voluminous writer, was originally bred an apothecary, but his marrying early and without a fortune, made him very ſoon look round for other reſources than his profeſſion. Having, therefore, in his apprenticeſhip, attended the botanical lectures of the company, and being poſſeſſed of quick natural parts, he ſoon made himſelf acquainted with the theoretical as well as practical parts of botany: from whence being recommended to the late duke of Richmond and lord Petre, he was by them employed in the inſpection and arrangement of their botanic gardens. Aſſiſted by the liberality of theſe nobleman, he executed a ſcheme of travelling over the kingdom, to collect the moſt rare and uncommon plants; which he afterwards publiſhed by ſubſcription: but after great reſearches and uncommon induſtry, this undertaking turned out by no means adequate to his expectation. The ſtage next preſented itſelf, as a ſoil in which genius might ſtand a chance of flouriſhing: but after two or three unſucceſsful attempts, it was found he had no pretenſions either to the ſock or buſkin; which once more reduced him to his botanical purſuits, and his buſineſs as an apothecary. At length, about the year 1746, he tranſlated from the Greek, a ſmall tract, written by Theophraſtus, on Gems, which he publiſhed by ſubſcription; and which being well executed, procured him friends, reputation, and money. Encouraged by this, he engaged in works of greater extent and importance. The firſt he undertook was A general natural hiſtory, in 3 vols folio. He next engaged, in conjunction with George Lewis Scott, Eſq; in furniſhing a Supplement to Chambers's Dictionary. He at the ſame time ſtarted the Britiſh Magazine; and while he was engaged in a great number of theſe and other works, ſome of which ſeemed to claim the continued attention of a whole life, he carried on a daily eſſay, under the title of *Inſpector*. Amidſt this hurry of buſineſs, Mr Hill was ſo laborious and ready in all his undertakings, and was withal ſo exact an œconomiſt of his time, that he ſcarcely ever miſſed a public amuſement for many years: where, while he relaxed from the ſeverer purſuits of ſtudy, he gleaned up articles of information for his periodical works. It would not be eaſy to trace Mr Hill, now Dr Hill (for he procured a diploma from the college of St Andrew's), through all his various purſuits in life. A quarrel he had with the Royal Society, for being refuſed as a member, which provoked him to ridicule that learned body, in A review of the works of the Royal Society of London, 4to, 1751; together with his over-writing himſelf upon all ſubjects without reſerve; made him ſink in the eſtimation of the public nearly in the ſame pace as he had aſcended. He found as uſual, however, reſources in his own invention. He applied himſelf to the preparation of certain ſimple medicines; ſuch as the eſſence of water-dock, tincture of velerian, balſam of honey, &c. The well-known ſimplicity of theſe medicines made the public judge favourably of their effects, inſomuch that they had a rapid ſale, and once more enabled the doctor to figure in that ſtyle of life ever ſo congenial to his inclination. Soon after the publication of the firſt of theſe medicines, he obtained the patronage of the earl of Bute, through whoſe intereſt he acquired the management of the royal gardens at Kew, with an handſome ſalary: and to wind up the whole of an extraordinary life, having, a little before his death, ſeized an opportunity to introduce himſelf to the knowledge of the king of Sweden, that monarch inveſted him with one of the orders of his court, which title he had not the happineſs of enjoying above two years. He died towards the cloſe of the year 1775.

HILLEL, ſenior, of Babylon, preſident of the ſanhedrim of Jeruſalem. He formed a celebrated ſchool there, in which he maintained the oral traditions of the Jews againſt Shamai, his colleague, whoſe diſciples adhered only to the written law; and this controverſy gave riſe to the ſects of Phariſees and Scribes. He was likewiſe one of the compilers of the Talmud. He alſo laboured much at giving a correct edition of the ſacred text; and there is attributed to him an ancient manuſcript bible, which bears his name. He flouriſhed about 30 years B. C. and died in a very advanced age.

Hillel, the naſi, or prince, another learned Jew, the grandſon of Judas Hakkadoſh, or the Saint, the author of the Miſhna, lived in the fourth century. He compoſed a cycle; and was one of the principal doctors of the Gemara. The greateſt number of the Jewiſh writers attribute to him the correct edition of the Hebrew text which bears the name of *Hillel*, which we have already mentioned in the preceding article. There have been ſeveral other Jewiſh writers of the ſame name.

HILLIA, in botany: A genus of the monogynia order, belonging to the hexandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The calyx is hexaphillous; the corolla cleft in ſix parts, and very long; the berry inferior, bilocular, and polyſpermous.

HILLSBOROUGH, a borough, fair, and poſt-town, in the county of Down, and province of Ulſter, 69 miles from Dublin. Here is a fine ſeat of the earl of Hillſborough. The town is pleaſantly ſituated and almoſt new built, in view of Liſburn, Belfaſt, and Carrickfergus bay; the church is magnificent, having an elegant ſpire, as lofty as that of St Patrick's in Dublin, and ſeven painted windows. Here is an excellent inn, and a thriving manufacture of muſlins. It has three fairs, and ſends two members to parliament. This place gives title of earl to the family of Hillſborough. N. Lat. 54. 30. W. Long. 6. 20.

Hillsborough, in North Carolina. See North Carolina.

HILUM, among botaniſts, denotes the eye of a bean.

HIMERA (anc. geog.), the name of two rivers in Sicily; one running northwards into the Tuſcan ſea, now called *Fiume di Termini*; and the other ſouthwards into the Lybian; dividing Sicily into two parts, being the boundary between the Syracuſans to the eaſt and Carthaginians to the weſt; not riſing from the ſame, but from different ſprings.

Himera (anc. geog.), a town of Sicily, at the mouth of the Himera, which ran northwards, on its left or weſt ſide: A colony of Zancle: afterwards deſtroyed by the Carthaginians (Diodorus Siculus).

HIMERENSES Thermae (anc. geog.), a town of Sicily, on the eaſt ſide of that Himera which runs to the north. After the deſtruction of the town of Himera by the Carthaginians, ſuch of the inhabitants as remained, ſettled in the ſame territory, not far from the ancient town. Now Termini. Made a Roman colony by Auguſtus.

HIN, a Hebrew meaſure of capacity for things liquid, containing the ſixth part of an ephah, or one gallon two pints Engliſh meaſure.

HINCKLEY, a market-town of Leiceſterſhire, built on a riſing ground, nearly on the borders of Leiceſterſhire, from which it is ſeparated by the Roman Watling-ſtreet road. It is diſtant from Coventry and Leiceſter 15 miles each, and 102 from London. It has been much larger than it is at preſent, the back lanes between the orchards having evidently been ſtreets originally, and the traces of the town-wall and ditch are in many places yet viſible. There are veſtiges of two Roman works, viz. the mount near the river, and the ruins of a bath near St Nicholas church, where teſſelated pavements have been dug up. The Jewery wall is ſaid to have been the temple of Janus. The caſtle was inhabited by John of Gaunt; but is now no more, the ſcite being converted into garden ground, the caſtle-hill conſiderably lowered, and a gentleman's houſe erected on the ſpot in 1770. The ſteeple of the preſent church was built with ſome of the ſtones of the caſtle. The town is now divided into the borough, and the bond without the liberties. It has a good market on Mondays, and a fair in Auguſt. The chief manufacture is ſtockings and fine ale. The town is ſaid to contain about 750 houſes. There are two churches, one chapel, and a place of worſhip for the Roman Catholics, beſides four meeting-houſes. The church is a neat large old ſtructure with a modern tower and a ſpire, the body of it was built in the 13th century, and near it are three mineral ſprings. This town is ſaid to be the middle and higheſt ground in England; and from it 50 churches may be ſeen, beſides gentlemens ſeats. It received great damage by a fire Sept. 5. 1728.

HIND, a female ſtag in the third year of its age. See Cervus.

HINDON, a ſmall town of Wiltſhire in England, which ſends two members to parliament. It is ſituated in E. Long. 2. 14. N. Lat. 51. 12.

HINDOOS, or Gentoos, the inhabitants of that part of India known by the name of *Hindoſtan* or the *Mogul's empire*, who profeſs the religion of the Bramins, ſuppoſed to be the ſame with that of the ancient Gymnoſophiſts of Ethiopia.

1 Their diviſion into tribes or caſts.

From the earlieſt period of hiſtory theſe people ſeem to have maintained the ſame religion, laws, and cuſtoms, which they do at this day; and indeed they and the Chineſe are examples of preſervance in theſe reſpects altogether unknown in the weſtern world. In the time of Diodorus Siculus they are ſaid to have been divided into ſeven caſts or tribes; but the intercourſe betwixt Europe and India was in his time ſo ſmall, that we may well ſuppoſe the hiſtorian to have been miſtaken, and that the ſame tenacity for which they are ſo remarkable in other reſpects has manifeſted itſelf alſo in this. At preſent they are divided only into four tribes; 1. The Bramin; 2. The Khatry; 3. The Bhyſe; and, 4. The Soodera. All theſe have diſtinct and ſeparate offices, and cannot, according to their laws intermingle with each other; but for certain offences they are ſubject to the loſs of their caſt, which is reckoned the higheſt puniſhment they can ſuffer; and hence is formed a kind of fifth caſt named *Pariars* on the coaſt of Coromandel, but in the Shanſcrit or ſacred language *Chandalas*. Theſe are eſteemed the dregs of the people, and are never employed but in the meaneſt offices. There is beſides a general diviſion which pervades the four caſts indiſcriminately; and which is taken from the worſhip of their gods *Viſhnou* and *Sheevah*; the worſhippers of the former being named *Viſhnou-bukht*; of the latter, *Sheevah-bukht*.

Of theſe four caſts the bramins are accounted the foremoſt in every reſpect; and all the laws have ſuch an evident partiality towards them, as cannot but induce us to ſuppoſe that they have had the principal hand in framing them. They are not, however, allowed to aſſume the ſovereignty: the religious ceremonies and the inſtruction of the people being their peculiar province. They alone are allowed to read the *Veda* or ſacred books; the *Khatries*, or caſt next in dignity, being only allowed to hear them read; while the other two can only read the *Saſtras* or commentaries upon them. As for the poor Chandalas, they dare not enter a temple, or be preſent at any religious ceremony.

In point of precedency the bramins claim a ſuperiority even to the princes; the latter being choſen out of the Khatry or ſecond caſt. A rajah will receive with reſpect the food that is prepared by a brahman, but the latter will eat nothing that has been prepared by any member of an inferior caſt. The puniſhment of a bramin for any crime is much milder than if he had belonged to another tribe; and the greateſt crime that can be committed is the murder of a bramin. No magiſtrate muſt *deſire* the death of one of theſe ſacred perſons, or cut off one of his limbs. They muſt be readily admitted into the preſence even of princes whenever they pleaſe: when paſſengers in a boat, they muſt be the firſt to enter and to go out; and the waterman muſt beſides carry them for nothing; every one who meets them on the road being likewiſe obliged to give place to them.

All the prieſts are choſen from among this order, ſuch as are not admitted to the ſacerdotal function being employed as ſecretaries and accountants. Theſe can never afterwards become prieſts, but continue to be greatly reverenced by the other caſts.

The Khatry or ſecond caſt are thoſe from among whom the ſovereigns are choſen.—The Bhyſe or Banians, who conſtitute the third caſt, have the charge of commercial affairs; and the Soodera, or fourth caſt, the moſt numerous of all, comprehend the labourers and artiſans. Theſe laſt are divided into as many claſſes as there are followers of different arts; all the children being invariably brought up to the profeſſion of their fathers, and it being abſolutely unlawful for them ever to alter it afterwards.

No Hindoo is allowed to quit the caſt in which he was born upon any account. All of them are very ſcrupulous with regard to their diet; but the bramins much more ſo than any of the reſt. They eat no fleſh, nor ſhed blood; which we are informed by Porphyry and Clemens Alexandrinus was the caſe in their time. Their ordinary food is rice and other vegetables, dreſſed with *ghee* (a kind of butter melted and refined ſo as to be capable of being kept for a long time), and ſeaſoned with ginger and other ſpices.—The food which they moſt eſteem, however, is milk as coming from the cow; an animal for which they have the moſt extravagant veneration, inſomuch that it is enacted in the code of Gentoo laws, that any one who exacts labour from a bullock that is hungry or thirſty, or that ſhall oblige him to labour when fatigued or out of ſeaſon, is liable to be fined by the magiſtrates. The other caſts, though leſs rigid, abſtain very religiouſly from what is forbidden them; nor will they eat any thing provided by a perſon of an inferior caſt, or by one of a different religion. Though they may eat ſome kinds of fleſh and fiſh, yet it is counted a virtue to abſtain from them all. None of them are allowed to taſte intoxicating liquor of any kind. Quintus Curtius indeed mentions a ſort of wine made uſe of by the Indians in his time; but this is ſuppoſed to have been no other than toddy, or the unfermented juice of the cocoa nut. This when fermented affords a ſpirit of a very unwholeſome quality: but it is drunk only by the Chandalas and the lower claſs of Europeans in the country. So exceedingly bigotted and ſuperſtitious are they in their abſurd maxims with regard to meat and drink, that ſome Seapoys in a Britiſh ſhip having expended all the water appropriated to their uſe, would have ſuffered themſelves to periſh for thirſt rather than taſte a drop of that which was uſed by the ſhip's company.

2
Of the religion of the Hindoos.

The religion of the Hindoos, by which theſe maxims are inculcated, and by which they are made to differ ſo much from other nations, is contained in certain books named *Veda, Vedams*, or *Beds*, written in a language called *Schanſcrit*, which is now known only to the learned among them. The books are ſuppoſed to have been the work not of the Supreme God himſelf, but of an inferior deity named Brimha. They inform us, that Brama, or Brahma, the ſupreme God, having created the world by the word of his mouth, formed a female deity, named Bawancy, who in an enthuſiaſm of joy and praiſe brought forth three eggs. From theſe were produced three male deities, named *Brimha, Viſhnou*, and *Sheevah*. Brimha was endowed with the power of creating the things of this world, Viſhnou with that of cheriſhing them, and Sheevah with that of reſtraining and correcting them. Thus Brimha became the creator of man; and in this character he formed the four caſts from different parts of his own body, the Bramins from his mouth, the Khatry from his arms, the Banians from his belly and thighs, and the Soodera from his feet. Hence, ſay they, theſe four different caſts derive the different offices aſſigned them; the Bramins to teach; the Khatry to defend and govern; the Banians to enrich by commerce and agriculture; and the Soodera to labour, ſerve, and obey. Brama himſelf endowed mankind with paſſions, and underſtanding to regulate them; while Brimha, having created the inferior beings, proceeded to write the Vedams, and delivered them to be read and explained by the bramins.

The religion of the Hindoos, though involved in ſuperſtition and idolatry, ſeems to be originally pure; inculcating the belief of an eternal and omnipotent Being; their ſubordinate deities Brimha, Viſhnou, and Sheevah, being only repreſentatives of the wiſdom, goodneſs, and power, of the ſupreme God Brama. All created things they ſuppoſe to be *types* of the attributes of Brama, whom they call the *principle of truth*, the *ſpirit of wiſdom*, and the *ſupreme being*; ſo that it is probable that all their idols were at firſt only deſigned to repreſent theſe attributes.

3
Different ſects.

There are a variety of ſects among the Hindoos: two great claſſes we have mentioned already, *viz.* the worſhippers of Viſhnou and thoſe of Sheevah; and theſe diſtinguiſh themſelves, the former by painting their faces with an horizontal line, the latter by a perpendicular one. There is, however, very little difference in point of religion between theſe or any other Hindoo ſects. All of them believe in the immortality of the ſoul, a ſtate of future rewards and puniſhments, and tranſmigration. Charity and hoſpitality are inculcated in the ſtrongeſt manner, and exiſt among them not only in theory, but in practice. "Hoſpitality (ſay they) is commanded to be exerciſed even towards an enemy, when he cometh into thine houſe; the tree doth not withdraw its ſhade even from the woodcutter. Good men extend their charity even to the vileſt animals. The moon doth not with-hold her light even from the Chandala." Theſe pure doctrines, however, are intermixed with ſome of the vileſt and moſt abſurd ſuperſtitions; and along with the true God they worſhip a number of inferior ones, of whom the principal are:

4
Account of their principal deities.

1. *Bawaney*, the mother of the gods, already mentioned, and ſuperior to all but Brama himſelf; but all the other goddeſſes are reckoned inferior to their gods or lords.

2. *Brimha*, in the Schanſcrit language, ſaid to mean "the wiſdom of God;" and who is ſuppoſed to fly on the wings of the *hanſe* or flamingo; an image of which is conſtantly kept near that of the god in the temple

where he is worſhipped. He has a crown on his head, and is repreſented with four hands. In one of theſe he holds a ſceptre, in another the ſacred books or Vedam, in the third a ring or circle as the emblem of eternity, ſuppoſed to be employed in aſſiſting and protecting his works.

3. *Seraſwatej,* the goddeſs or wife of Brimha, preſides over muſic, harmony, eloquence, and invention. She is alſo ſaid to be the inventreſs of the letters called *Devanagry,* by which the divine will was firſt promulgated among mankind. In the argument of an hymn addreſſed to this goddeſs, ſhe is ſuppoſed to have a number of inferior deities acting in ſubordination to her. Theſe are called *Rags,* which preſide over each mode, and likewiſe over each of the ſeaſons. Theſe ſeaſons in Hindoſtan are ſix in number; viz. 1. The *Seeſar,* or dewy ſeaſon. 2. *Heemat,* or the cold ſeaſon. 3. *Vaſant,* the mild ſeaſon or ſpring. 4. *Greſhma,* or the hot ſeaſon. 5. *Varſa,* the rainy ſeaſon. 6. *Sarat,* the breaking up or end of the rains.

The *Rags,* in their muſical capacity, are accompanied each with five *Ragnies,* a kind of female deities or nymphs of harmony. Each of theſe has eight ſons or genii; and a diſtinct ſeaſon is appointed for the muſic of each rag, during which only it can be ſung or played; and this at diſtinct and ſtated hours of the day or night. A ſeventh mode of muſic belonging to *Deipec,* or *Cupid the inflamer,* is ſaid once to have exiſted, but now to be loſt; and a muſician, who attempted to reſtore it, to have been conſumed with fire from heaven.

4. *Viſhnou,* the moſt celebrated of all the Indian deities, is ſuppoſed to fly or ride on the garoora, a kind of large brown kite, which is found in plenty in the neighbourhood; and on which Viſhnou is ſometimes repreſented as ſitting; though at others he is repreſented on a ſerpent with a great number of different heads. At ſome of his temples the bramins accuſtom all birds they can find, of the ſpecies abovementioned, to come and be fed; calling them by ſtriking upon a braſs plate. This deity is ſaid to have had ten different incarnations to deſtroy the giants with which the earth was infeſted; and in theſe he is repreſented in as many different figures, all of which are to the laſt degree fantaſtic and monſtrous. His common form is that of a man with four hands, and a number of heads ſet round in a circle ſuppoſed to be emblems of omniſcience and omnipotence. In his firſt incarnation he is repreſented as coming out of the mouth of a fiſh, with ſeveral hands containing ſwords, &c. In another he has the head of a boar with monſtrous tuſks, bearing a city in the air, and ſtands upon a vanquiſhed giant with horns on his head. In others of his incarnations, he has the head of a horſe or other animals, with a great number of arms brandiſhing ſwords, &c.

In ſome parts of his character this deity is repreſented not as a deſtroyer, but a preſerver of mankind: and he is then diſtinguiſhed by the name of *Hary.* Biſhop Wilkins deſcribes an image of him in this character at a place named *Jehan-query,* a ſmall rocky iſland of the Ganges in the province of Bahar. This image is of a gigantic ſize, recumbent on a coiled ſerpent, whoſe numerous heads are twiſted by the artiſt into a kind of canopy over the ſleeping god, and from each of its mouth iſſued a forked tongue, as threatening deſtruction to thoſe who ſhould dare to approach.

5. *Sheevah* is repreſented under a human form, though frequently varied, as is alſo his name; but he is moſt frequently called *Sheevah* and *Mahadeg.* In his deſtroying character he is repreſented as a man with a fierce look, with a ſnake twiſted round his neck. He is thought to preſide over good and evil fortune, in token of which he is repreſented with a creſcent on his head. He rides upon an ox.

6. *Vikrama,* the god of victory, is ſaid to have had a particular kind of ſacrifice offered to him ſomewhat like the ſcape goat of the Jews, *viz.* by letting a horſe looſe in the foreſt, and not employing him again.

7. *Yam Rajah,* or *Darham Rajah,* is repreſented as the judge of the dead, and ruler of the infernal regions, in a manner ſimilar to the Minos and Pluto of the ancient Greeks. He is the ſon of *Sour,* "the ſun," by *Biſookama* daughter of the great architect of the heavenly manſions, and patron of artificers. He rides upon a buffalo, with a ſceptre in his hand, having two aſſiſtants, *Chiter* and *Gopt;* the former of whom reports the good, and the latter the bad actions of men. Theſe are attended by two genii, who watch every individual of the human race; Chiter's ſpy being on the right, and Gopt's on the left. The ſouls of deceaſed perſons are carried by the *Jambouts* or meſſengers of death into the preſence of *Darham,* where his actions are inſtantly proclaimed, and ſentence paſſed accordingly. The infernal manſions are named by the Hindoos *Narekha,* and are divided into a great number of places, according to the degrees of puniſhment to be endured by the criminal; but eternal pument for any offence is ſuppoſed to be inconſiſtent with the goodneſs of God. Inſtead of this, the Hindoos ſuppoſe, that after the ſouls of the wicked have been puniſhed long enough in Narekha, they are ſent back into the world to animate other bodies either of men or beaſts, according to circumſtances. Thoſe who have lived a life partly good and partly bad, are likewiſe ſent back to this world; and theſe trials and tranſmigrations are repeated till they be thoroughly purged of all inclination to ſin. But as for thoſe holy men who have ſpent their lives in piety and devotion, they are inſtantly conveyed by the genii to the manſions of celeſtial bliſs, where they are abſorbed into the univerſal ſpirit; a ſtate according to every idea we can form equivalent to annihilation!

8. *Kriſhen* and the nine *Gopia,* among the Hindoos, correſpond with Apollo and the nine muſes of the Greeks. This deity is repreſented as a young man ſometimes playing on a flute. He has a variety of names, and is ſuppoſed to be of a very amorous complexion, having once reſided in a diſtrict named *Birge,* where he embraced almoſt all the women in the country. From his reſidence here, or from theſe amorous exploits, he is ſometimes called *Birge-put.*

9. *Kama-deva,* the god of love, is ſaid to be the ſon of *Maya,* or the general attractive power; married to *Retty,* or *Affection.* He is repreſented as a beautiful youth, ſometimes converſing with his mother or conſort in his temples or gardens; at other times riding on a parrot by moonlight: and Mr Foſter informs us, that on the taking of Tanjore by the Engliſh, a curious

rious picture was found, repreſenting him riding on an elephant, the body of which was compoſed of ſeven young women twiſted together in ſuch a manner as to repreſent the enormous animal. This is ſuppoſed to be a device of a ſimilar nature with that of the Greeks, who placed their *Eros* upon a lion; thus intimating, that love is capable of taming the fierceſt of animals. The bow of this deity is ſaid to be of ſugar-cane or of *flowers*, and the ſtring of *bees*: he has five arrows, each of them tipped with an Indian bloſſom of an heating nature. His enſign is a fiſh on a red ground, carried by the foremoſt of his attendant nymphs or dancing girls.

10. *Lingam*, correſponding to the Priapus or Phallus of the ancients, is worſhipped by the Hindoos in order to obtain fecundity. This deity is adored the more fervently, as they depend on their children for performing certain ceremonies to their manes, which they imagine will mitigate their puniſhment in the next world. The devotees of this god go naked, but are ſuppoſed to be ſuch ſanctified perſons, that women may approach them without any danger. They vow perpetual chaſtity; and death is the conſequence of a breach of their vow. Huſbands whoſe wives are barren invite them to their houſes, where certain ceremonies, generally thought to be effectual, are performed.

Beſides theſe, there are a number of other gods whoſe character is leſs eminent, though we are by no means acquainted, nor are the Hindoos themſelves perhaps, with the particular rank which each deity carries with reſpect to another. Some of theſe deities are, 11. *Nared*, the ſon of Brimha, and inventor of a fretted inſtrument named *Vene*. 12. *Lechemy*, the goddeſs of plenty, and wife of Viſhnou. 13. *Cowry, Kaly*, from *Kala* "time;" the wife of Sheevah, and goddeſs of deſtruction. 14. *Varoona*, the god of the ſeas and waters, riding on a crocodile. 15. *Vayoo*, the gods of the winds, riding on an antelope with a ſabre in his hand. 16. *Agnee*, the god of fire, riding on a ram. 17. *Vaſoodka*, a goddeſs repreſenting the earth. 18. *Pakreety*, or nature, repreſented by a beautiful young woman. 19. *Sour* or *Shan*, the ſun; called alſo the king of the ſtars and planets, repreſented as ſitting in a chariot drawn by one horſe, ſometimes with ſeven, and ſometimes with twelve heads. 20. *Sangia*, the mother of the river Jumna, and wife of the ſun. 21. *Chandava*, the moon, in a chariot drawn by antelopes, and holding a rabbit in her right hand. 22. *Vreekaſpaty*, the god of learning, attended by beautiful young nymphs named *Veedyadhares*, or profeſſors of ſcience. 23. *Ganes*, the god of prudence and policy worſhipped before the undertaking of any thing of conſequence. 24. *Fame*, repreſented by a ſerpent with a great number of tongues; and known by ſeveral names. 25. *Darma-deva*, the god of virtue, ſometimes repreſented by a white bull. 26. *Virſavana* or *Cobhair*, the god of riches, repreſented by a man riding on a white horſe. 27. *Dhan-wantary*, the god of medicine.

5
Their demigods.

Beſides theſe ſupreme deities, the Hindoos have a number of demigods, who are ſuppoſed to inhabit the air, the earth, and the waters, and in ſhort the whole world; ſo that every mountain, river, wood, town, village, &c. has one of theſe tutelar deities, as was the caſe among the weſtern heathens. By nature theſe demigods are ſubject to death, but are ſuppoſed to obtain immortality by the uſe of a certain drink named *Amrut*. Their exploits in many inſtances reſemble thoſe of Bacchus, Hercules, Theſeus, &c. and in a beautiful epic poem named *Rancyan*, we have an account of the wars of Ram, one of the demigods, with Ravana tyrant of Ceylon.

6
Manner of worſhip.

All theſe deities are worſhipped, as in other countries, by going to their temples, faſting, prayers, and the performance of ceremonies to their honour. They pray thrice a day, at morning, noon, and evening, turning their faces towards the eaſt. They uſe many ablutions, and, like the Phariſees of old, they always waſh before meals. Running water is always preferred for this purpoſe to ſuch as ſtagnates. Fruits, flowers, incenſe and money, are offered in ſacrifice to their idols; but for the dead they offer a kind of cake named *Peenda*: and offerings of this kind always take place on the day of the full moon. Nothing ſanguinary is known in the worſhip of the Hindoos at preſent, though there is a tradition that it was formerly of this kind; nay, that even human ſacrifices were made uſe of: but if ſuch a cuſtom ever did exiſt, it muſt have been at a very diſtant period. Their ſacred writings indeed make mention of bloody ſacrifices of various kinds, not excepting even thoſe of the human race: but ſo many peculiarities are mentioned with regard to the proper victims, that it is almoſt impoſſible to find them. The only inſtance of bloody ſacrifices we find on record among the Hindoos is that of the buffaloe to Bawaney, the mother of the gods.

Among the Hindoos there are two kinds of worſhip, diſtinguiſhed by the name of the worſhip of the *inviſible God* and of *idols*. The worſhippers of the inviſible God are, ſtrictly ſpeaking, deiſts: the idolaters perform many abſurd and unmeaning ceremonies, too tedious to mention, all of which are conducted by a bramin; and during the performance of theſe rites, the dancing women occaſionally perform in the court, ſinging the praiſes of the Deity in concert with various inſtruments. All the Hindoos ſeem to worſhip the fire; at leaſt they certainly pay a great veneration to it. Biſhop Wilkins informs us, that they are enjoined to light up a fire at certain times, which muſt be produced by the friction of two pieces of wood of a particular kind; and the fire thus produced is made uſe of for conſuming their ſacrifices, burning the dead, and in the ceremonies of marriage.

7
Their devotees.

Great numbers of devotees are to be met with every where through Hindoſtan. Every caſt is allowed to aſſume this way of life excepting the Chandalahs, who are excluded. Thoſe held moſt in eſteem are named *Seniaſſes* and *Jogeys*. The former are allowed no other clothing but what ſuffices for covering their nakedneſs, nor have they any wordly goods beſides a pitcher and ſtaff; but though they are ſtrictly enjoined to meditate on the truths contained in the ſacred writings, they are expreſsly forbidden to argue about them. They muſt eat but once a day, and that very ſparingly, of rice or other vegetables; they muſt alſo ſhow the moſt perfect indifference about hunger, thirſt, heat, cold, or any thing whatever relative to this world; looking forward with continual deſire to the ſeparation of the ſoul from the body. Should any of them fail in this extravagant ſelf-denial, he is rendered ſo much more criminal by the attempt, as he neglected the duties of ordinary life for thoſe of another which he was not able to accompliſh. The Yogeys are bound to much the ſame rules, and both ſubject themſelves to the moſt extravagant penances. Some will keep their arms conſtantly ſtretched over their heads till they become quite withered and incapable of motion; others keep them croſſed over their breaſt during life; while others, by keeping their hands conſtantly ſhut, have them quite pierced through by the growth of their nails. Some chain themſelves to trees or particular ſpots of ground, which they never quit; others reſolve never to lie down, but ſleep leaning againſt a tree; but the moſt curious penance perhaps on record is that of a Yogey, who meaſured the diſtance between Benares and Jaggernaut with the length of his body, lying down and riſing alternately. Many of theſe enthuſiaſts will throw themſelves in the way of the chariots of Viſhnou or Sheevah, which are ſometimes brought forth in proceſſion to celebrate the feaſt of a temple, and drawn by ſeveral hundreds of men. Thus the wretched devotees are in an inſtant cruſhed to pieces. Others devote themſelves to the flames, in order to ſhow their regard to ſome of their idols, or to appeaſe the wrath of one whom they ſuppoſe to be offended.

A certain ſet of devotees are named *Pandarams*; and another on the coaſt of Coromandel are named *Cary-Patra Pandarams*. The former rub themſelves all over with cow-dung, running about the country ſinging the praiſes of the god Sheevah whom they worſhip. The latter go about aſking charity at doors by ſtriking their hands together, for they never ſpeak. They accept of nothing but rice; and when they have got as much as will ſatisfy their hunger, never give themſelves any trouble about more, but paſs the reſt of the day in the ſhade, in a ſtate of ſuch ſupine indolence as ſcarce to look at any object whatever. The Tadinums are another ſet of mendicants, who ſing the incarnations of Viſhnou. They have hollow braſs rings round their ancles, which they fill with pebbles; ſo that they make a conſiderable noiſe as they walk; they beat likewiſe a kind of tabor.

8
Mildneſs of the Hindoo religion.

The greateſt ſingularity in the Hindoo religion, however, is, that ſo far from perſecuting thoſe of a contrary perſuaſion, which is too often the caſe with other profeſſors, they abſolutely refuſe even to admit of a proſelyte. They believe all religions to be equally acceptable to the Supreme Being; aſſigning as a reaſon, that if the Author of the univerſe preferred one to another, it would have been impoſſible for any other to have prevailed than that which he approved. Every religion, therefore, they conclude to be adapted to the country where it is eſtabliſhed; and that all in their original purity are equally acceptable.

9
Their marriages,

Among the Hindoos, marriage is conſidered a sa religious duty; and parents are ſtrictly commanded to marry their children by the time they arrive at eleven years of age at fartheſt. Polygamy is allowed; but this licence is ſeldom made uſe of, unleſs there ſhould be no children by the firſt wife. In caſe the ſecond wife alſo proves barren, they commonly adopt a ſon from among their relations.

The Hindoos receive no dower with their wives; but, on the contrary, the intended huſband makes a preſent to the father of his bride. Nevertheleſs, in many caſes, a rich man will chooſe a poor relation for his daughter; in which caſe the bride's father is at the expence of the wedding, receives his ſon-in-law into his houſe, or gives him a part of his fortune. The bridegroom then quits the dwelling of his parents with certain ceremonies, and lives with his father-in-law. Many formalities take place between the parties even after the match is fully agreed upon; and the celebration of the marriage is attended with much expence; magnificent proceſſions are made, the bride and bridegroom ſitting in the ſame palankeen, attended by their friends and relations; ſome riding in palankeens, ſome on horſes, and others on elephants. So great is their vanity indeed on this occaſion, that they will borrow or hire numbers of theſe expenſive animals to do honour to the ceremony. The rejoicings laſt ſeveral days; during the evenings of which, fire-works and illuminations are diſplayed, and dancing women perform their feats; the whole concluding with alms to the poor, and preſents to the bramins and principal gueſts, generally conſiſting of ſhawls, pieces of muſlin, and other cloths. A number of other ceremonies are performed when the parties come of age, and are allowed to cohabit together. The ſame are repeated when the young wife becomes pregnant; when ſhe paſſes the ſeventh month without any accident; and when ſhe is delivered of her child. The relations aſſemble on the tenth day after the birth, to aſſiſt at the ceremony of naming the child; but if the bramins be of opinion that the aſpect of the planets is at that time unfavourable, the ceremony is delayed, and prayers offered up to avert the misfortune. When the lucky moment is diſcovered, they fill as many pots with water as there are planets, and offer a ſacrifice to them; afterwards they ſprinkle the head of the child with water, and the bramin gives it ſuch a name as he thinks beſt adapted to the time and circumſtances; and the ceremony concludes with prayers, preſents to the bramins, and alms to the poor. Mothers are obliged to ſuckle their own children; nor can this duty be diſpenſed with except in caſe of ſickneſs. New ceremonies, with preſents to the bramins, take place, when a boy comes of age to receive the ſtring which the three firſt caſts wear round their waiſt.

10
Education of children

Boys are taught to read and write by the bramins, who keep ſchools for that purpoſe throughout the country. They uſe leaves inſtead of books, and write with a pointed iron inſtrument. The leaves are generally thoſe of the palm-tree, which being ſmooth and hard, and having a thick ſubſtance, may be kept for almoſt any length of time, and the letters are not ſubject to grow faint or be effaced. The leaves are cut into ſlips about an inch broad, and their books conſiſt of a number of theſe tied together by means of a hole in one end. Sometimes the letters are rubbed over with a black powder, to render them more legible. When they write upon paper, they make uſe of a ſmall reed. Sometimes they are initiated in writing by making letters upon ſand ſtrewed on the floor; and they are taught arithmetic by means of a number of ſmall pebbles. The education of the girls is much more limited, ſeldom extending farther than the articles of their religion.

Among theſe people the cuſtom of burning the dead

11
Barbarous cuſtom of women burning themſelves.

prevails univerſally; and the horrid practice of wives burning themſelves along with their deceaſed huſbands was formerly very common, though now much leſs ſo. At preſent it is totally prohibited in the Britiſh dominions; and even the Mohammedans endeavour to diſcountenance a practice ſo barbarous, though many of their governors are accuſed of conniving at it through motives of avarice. At preſent it is moſt common in the country of the Rajahs, and among women of high rank.

This piece of barbarity is not enjoined by any law exiſting among the Hindoos; it is only ſaid to be *proper*, and rewards are promiſed in the next world to thoſe who do ſo. But though a wife chooſes to outlive her huſband, ſhe is in no caſe whatever permitted to marry again, even though the marriage with the former had never been completed. It is unlawful for a woman to burn herſelf if ſhe be with child at the time of her huſband's deceaſe, or if he died at a diſtance from her. In the latter caſe, however, ſhe may do ſo if ſhe can procure his girdle or turban to be put on the funeral pile along with her. Theſe miſerable enthuſiaſts, who devote themſelves to this dreadful death, ſuffer with the greateſt conſtancy; and Mr Holwel gives an account of one who, being told of the pain ſhe muſt ſuffer (with a view to diſſuade her), put her finger into the fire and kept it there for a conſiderable time; after which ſhe put fire on the palm of her hand, with incenſe upon it, and fumigated the bramins who were preſent. Sometimes a chapel is erected on the place where one of thoſe ſacrifices has been performed; ſometimes it is incloſed, flowers planted upon it, and images ſet up.—In ſome few places the Hindoos bury their dead; and ſome women have been known to ſuffer themſelves to be buried alive with their deceaſed huſbands: but the inſtances of this are ſtill more rare than thoſe of burning.—No woman is allowed any inheritance among the Hindoos; ſo that if a man dies without male iſſue, his eſtate goes to his adopted ſon or to his neareſt relation.

12
Inſtances of heroiſm among the Hindoos.

The Hindoos, though naturally mild and timid, will on many occaſions meet death with the moſt heroic intrepidity. An Hindoo who lies at the point of death, will talk of his deceaſe with the utmoſt compoſure; and if near the river Ganges, will deſire to be carried out, that he may expire on its banks. Such is the exceſſive veneration they have for their religion and cuſtoms, that no perſon will infringe them even to preſerve his own life. An Hindoo, we are told, being ill of a putrid fever, was prevailed upon to ſend for an European phyſician, who preſcribed him the bark in wine; but this was refuſed with the greateſt obſtinacy even to the very laſt, though the governor himſelf joined in his ſolicitations, and in other matters had a conſiderable influence over him. In many inſtances theſe people, both in ancient and modern times, have been known, when cloſely beſieged by an enemy whom they could not reſiſt, to kill their wives and children, ſet fire to their houſes, and then violently ruſh upon their adverſaries till every one was deſtroyed. In the late war, ſome Seapoys in the Britiſh ſervice, having been concerned in a mutiny, were condemned to be blown away from the mouths of cannon. Some grenadiers cried out, that as they had all along had the poſt of honour, they ſaw no reaſon why they ſhould be denied it now; and therefore deſired that they might be blown away firſt. This being granted, they walked forward to the guns with compoſure, begged that they might be ſpared the indignity of being tied, and, placing their breaſts cloſe to the muzzles, were ſhot away. The commanding officer was ſo much affected with this inſtance of heroiſm, that he pardoned all the reſt.

13
Their general character.

In ordinary life the Hindoos are cheerful and lively; fond of converſation and amuſements, particularly dancing. They do not, however, learn or practiſe dancing themſelves, but have women taught for the purpoſe; and in beholding theſe they will ſpend whole nights. They diſapprove of many parts of the education of European ladies, as ſuppoſing that they engage the attention too much, and draw away a woman's affection from her huſband and children. Hence there are few women in Hindoſtan who can either read or write. In general they are finely ſhaped, gentle in their manners, and have ſoft and even muſical voices. The women of Kaſhmere, according to Mr. Forſter, have a bright olive complexion, fine features, and delicate ſhape; a pleaſing freedom in their manners, without any tendency to immodeſty.

14
Dreſs of the women

The dreſs of the modeſt women in Hindoſtan conſiſts of a cloſe jacket, which covers their breaſts, but perfectly ſhows their form. The ſleeves are tight, and reach half way to the elbows, with a narrow border painted or embroidered all round the edges. Inſtead of a petticoat, they have a piece of white cotton cloth wrapped round the loins, and reaching near the ancle on the one ſide, but not quite ſo low on the other. A wide piece of muſlin is thrown over the right ſhoulder; which, paſſing under the left arm, is croſſed round the middle, and hangs down to the feet. The hair is uſually rolled up into a knot or bunch towards the back part of the head; and ſome have curls hanging before and behind the ears. They wear bracelets on their arms, rings in their ears, and on their fingers, toes and ancles; with ſometimes a ſmall one in their noſtril.

The dreſs of the dancing women, who are likewiſe votaries of Venus, is very various. Sometimes they wear a jama, or long robe of wrought muſlin, or gold and ſilver tiſſue; the hair plaited and hanging down behind, with ſpiral curls on each ſide of the face. They are taught every accompliſhment which can be ſuppoſed to captivate the other ſex; and form a claſs entirely different from the reſt of the people, and live by their own rules. Their clothes, jewels, and lodging, are conſidered as implements of their trade, and muſt be allowed them in caſes of confiſcation for debt: They may drink ſpirituous liquors, and eat any kind of meat except beef: their dances are ſaid to reſemble pretty exactly thoſe of the ancient Bacchanalians repreſented in ſome of the ancient paintings and bas reliefs. In ſome of their dances they attach gold and ſilver bells to the rings of the ſame metals they wear on their ancles.

15
Dreſs of the men.

The men generally ſhave their heads and beards, leaving only a pair of ſmall whiſkers and a lock on the back part of their head, which they take great care to preſerve. In Kaſhmere and ſome other places, they let their beards grow to the length of two inches. They wear turbans on their heads; but the bramins who officiate in the temples commonly go with their heads uncovered, and the upper part of the body naked:

round their ſhoulder they hang the ſacred ſtring called *Zennar*, made of a kind of perennial cotton, and compoſed of a certain number of threads of a determined length. The Khatries wear alſo a ſtring of this kind, but compoſed of fewer threads; the Bhyſe have one with ſtill fewer threads, but the Sooderas are not allowed to wear any ſtring. The other dreſs of the bramins conſiſt of a piece of white cotton cloth wrapped about the loins, deſcending below the knee, but lower on the left than on the right ſide. In cold weather they ſometimes put a red cap on their heads, and wrap a ſhawl round their bodies.—The Khatries, and moſt other of the inhabitants of this country, wear alſo pieces of cotton cloth wrapped round them, which cover the upper as well as the lower part of the body. Ear-rings and bracelets are worn by the men as well as women: and they are fond of ornamenting themſelves with diamonds, rubies, and other precious ſtones, when they can procure them. They wear ſlippers on their feet of fine woollen cloth or velvet, frequently embroidered with gold and ſilver; thoſe of princes being ſometimes adorned with precious ſtones. The lower claſſes wear ſandals or ſlippers of coarſe woollen cloth or leather. Theſe ſlippers are always put off on going into any apartment, being left at the door, or given to an attendant; nevertheleſs the Hindoos make no complaints of the Europeans for not putting off their ſhoes when they come into their houſes, which muſt certainly appear very uncouth to them.

Hindoo families are always governed by the eldeſt male, to whom great reſpect is ſhown. Filial veneration is carried to ſuch a height among them, that a ſon will not ſit down in the preſence of his father until ordered to do ſo: and Mr Foſter obſerves, that during the whole time of his reſidence in India, he never ſaw a direct inſtance of undutifulneſs to parents; and the ſame is related by other writers.

16 Their houſes. The houſes of the Hindoos make a worſe appearance than could be ſuppoſed from their ingenuity in other reſpects. In the ſouthern parts of the country, the houſes are only of one ſtory. On each ſide of the door, towards the ſtreet, is a narrow gallery covered by the ſlope of the roof which projects over it, and which, as far as the gallery extends, is ſupported by pillars of brick or wood. The floor of this gallery is raiſed about 30 inches above the level of the ſtreet, and the porters, or bearers of palankeens, with the foot ſoldiers named *Peons*, who commonly hire themſelves to noblemen, often lie down in this place. This entrance leads into a court, which is alſo ſurrounded by a gallery like the former. On one ſide of the court is a large room, on a level with the floor of the gallery; open in front, and ſpread with mats and carpets covered with white cotton cloth, where the maſter of the houſe receives viſits and tranſacts buſineſs. From this court there are entrances by very ſmall doors to the private apartments. In the northern parts, houſes of two or three ſtories are commonly met with. Over all the country alſo we meet with the ruins of palaces, which evidently ſhow the magnificence of former times.

17 Learning of the Bramins. The bramins of India were anciently much celebrated for their learning, though they now make a very inconſiderable figure in compariſon with the Europeans. According to Philoſtratus, the Gymnoſophiſts of Ethiopia were a colony of bramins, who, being obliged to leave India on account of the murder of their king near the banks of the Ganges, migrated into that country. The ancient bramins, however, may juſtly be ſuppoſed to have cultivated ſcience with much greater ſucceſs than their deſcendants can boaſt of, conſidering the ruinous wars and revolutions to which the country has been ſubjected. Metaphyſics, as well as moral and natural philoſophy, appear to have been well underſtood among them; but at preſent all the Hindoo knowledge is confined to thoſe whom they call *Pundits*, "doctors or learned men." Theſe only underſtand the language called *Schanſcrit* or *Sanſcrit*, (from two words ſignifying perfection); in which the ancient books were written.

18 Metaphyſics. The metaphyſics of the bramins is much the ſame with that of ſome ancient Greek philoſophers. They believe the human ſoul to be an emanation from the Deity, as light and heat from the ſun. Gowtama, an ancient metaphyſician, diſtinguiſhes two kinds of ſouls, the divine and vital. The former reſembles the eternal ſpirit from which it came, is immaterial, indiviſible, and without paſſions; the vital ſoul is a ſubtile element which pervades all things, diſtinct from organiſed matter, and which is the origin of all our deſires. The external ſenſes, according to this author, are repreſentations of external things to the mind, by which it is furniſhed with materials for its various operations; but unleſs the mind act in conjunction with the ſenſes, the operation is loſt, as in that abſence of mind which takes place in deep contemplation. He treats likewiſe of reaſon, memory, perception, and other abſtract ſubjects. He is of opinion, that the world could not exiſt without a firſt cauſe; chance being nothing but the effect of an unknown cauſe: he is of opinion, however, that it is folly to make any conjectures concerning the beginning or duration of the world. In treating of providence, he denies any immediate interpoſition of the Deity; maintaining, that the Supreme Being having created the ſyſtem of nature, allowed it to proceed according to the laws originally impreſſed upon it, and man to follow the impulſe of his own deſires, reſtrained and conducted by his reaſon. His doctrine concerning a future ſtate is not different from what we have already ſtated as the belief of the Hindoos in general. According to biſhop Wilkins, many of them believe that this world is a ſtate of rewards and puniſhments as well as of probation; and that good or bad fortune are the effects of good or evil actions committed in a former ſtate.

19 Their aſtronomy. The ſcience for which the bramins, however, were moſt remarkable, is that of aſtronomy; and in this their progreſs was ſo great, as even yet to furniſh matter of admiration to the moderns.—The Europeans firſt became acquainted with the Indian aſtronomy in 1687, from a Siameſe MS. containing rules for calculating the places of the ſun and moon, brought home by M. Loubere the French ambaſſador at Siam. The principles on which the tables in this MS. were founded, however, proved to be ſo obſcure, that it required the genius of Caſſini to inveſtigate them. The miſſionaries afterwards ſent over two other ſets of tables from Hindoſtan; but no attention was paid to them till M. le Gentil returned from obſerving the tranſit of Venus in 1769. During the time of his ſtay in Hindoſtan, the bramins had been much more familiar with him on account of his aſtronomical knowledge, than they uſually were with

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with Europeans; and he thus had an opportunity of obtaining conſiderable inſight into their methods of calculation. In conſequence of this inſtruction he publiſhed tables and rules, according to the Indian method, in the academy of ſciences for 1772; and in the explanation of theſe M. Bailly has employed a whole volume. The objects of this aſtronomy, according to Dr. Playfair, are, 1. Tables and rules for calculating the places of the ſun and moon. 2. Of the planets. 3. For determining the phaſes of eclipſes. They divide the zodiac into 27 conſtellations, probably from the motion of the moon through it in 27 days; and to this lunar motion the Doctor aſcribes the general diviſion of time into weeks, which has prevailed ſo univerſally throughout the world. The days of the week were dedicated to the planets, as by the ancient heathens of the weſt, and in preciſely the ſame order. The ecliptic is divided into ſigns, degrees, and minutes, as with us: and indeed their calculations are entirely ſexageſimal, the day and night being divided into 60 hours; ſo that each of their hours is only 24 of our minutes, and each of their minutes 24 of our ſeconds.

The requiſites for calculating by the Indian tables are, 1. An obſervation of the celeſtial body in ſome paſt moment of time, which is commonly called the Epoch of the tables. 2. The mean rate of the planet's motion. 3. The correction on account of the irregular motion of the body, to be added or ſubſtracted from the mean place, according to circumſtances. They calculate the places of the ſun and moon, not from the time of their entrance into Aries, but into the moveable Zodiac. Thus the beginning of the year is continually advancing with regard to the ſeaſons; and in 24,000 years will have made the complete round. The mean place of the ſun for any time is deduced on the ſuppoſition that 800 years contain 292,207 days; from whence, by various calculations, the length of the year comes out only 1′ 53″ greater than that of De la Caille; which is more accurate than any of our ancient aſtronomical tables. In the equation of the ſun's centre, however, they commit an error of no leſs than 16′: but Dr. Playfair is of opinion that this cannot be aſcribed wholly to their inaccuracy, as there was a time when their calculation approached very near the truth; and even at preſent the error is leſs than it appears to be.

The motions of the moon are deduced from a cycle of 19 years; during which ſhe makes nearly 235 revolutions; and which period conſtitutes the famous cycle ſuppoſed to have been invented by Meton the Athenian aſtronomer, and from him called the Metonic Cycle. They are likewiſe ſurpriſingly exact in calculating the moon's apogee and ſome of the inequalities of her motion; they know the apparent motion of the fixed ſtars eaſtward, and the Siameſe tables make it only four ſeconds too quick; which ſtill ſhows a great accuracy of calculation, as Ptolemy the celebrated aſtronomer made an error of no leſs than 14 ſeconds in calculating the ſame thing. M. Caſſini, however, informs us, that theſe tables are not calculated for the meridian of Siam, but for a place 18° 15′ to the weſtward of it, which brings us very near the meridian of Benares, the ancient ſeat of Indian learning. This likewiſe agrees with what the Hindoos call their firſt meridian, which paſſes through Ceylon, and the banks of the river Remananur. It muſt be obſerved, however, that the geography of the Hindoos is much more inaccurate than their aſtronomy.

The date of the Siameſe tables is not very ancient; and that of the tables abovementioned ſent from Hindoſtan by the miſſionaries is ſtill more modern. Theſe, however, are written in ſuch an enigmatical manner, that the miſſionary who ſent them was unable to tell their meaning; and Dr Playfair ſuppoſes that even the Bramins themſelves were ignorant of it. Nevertheleſs they were decyphered by M. le Gentil; who thinks that they have the appearance of being copied from inſcriptions on ſtone. The minutes and ſeconds are not ranged in vertical columns, but in rows under one another, and without any title to point out their meaning or connection.

The tables of Tirvalore are among the moſt remarkable of all we are yet acquainted with. Their date, according to Dr Playfair, correſponds with the year 3102 B. C. thus running up to the year of the world 902, when Adam was ſtill in life. This era is famous in Hindoſtan under the name of *Calyougham*: and as this extrardinary antiquity cannot but create ſome ſuſpicion, Dr Playfair has been at ſome pains to determine whether it is real or fictitious, *i. e.* whether it has been determined by actual obſervation, or derived by calculation from tables of more modern date. The reſult of his labours is, that we are to account the Calyougham as determined by obſervation; and that had it been otherwiſe, we muſt have been furniſhed with infallible methods of detecting the fallacy. His reaſons for this opinion are,

1. The taſk would have been too difficult, even for modern aſtronomers, to make the neceſſary calculations, without taking into account the diſturbances ariſing from the action of the heavenly bodies upon one another, and with which we cannot ſuppoſe the ancient aſtronomers to have been equally well acquainted with the moderns. By reaſon of theſe variations, as well as from the ſmall errors unavoidable in every calculation, any ſet of aſtronomical tables will be found prodigiouſly inaccurate when applied to any period very far diſtant from the time of obſervation. Hence, ſays our author, “it may be eſtabliſhed as a maxim, that if there be given a ſyſtem of aſtronomical tables, founded on obſervations of an unknown date, that date may be found by taking the time when the tables repreſent the celeſtial motions moſt exactly.”—This indeed might be done, provided we were furniſhed with any ſet of perfectly accurate tables with which we could compare the ſuſpected ones; and Dr Playfair thinks it “a very reaſonable poſtulatum,” that our modern aſtronomical tables, though not perfectly accurate, are yet capable of determining the places of all the celeſtial bodies without any ſenſible error for a longer period than that of the Calyougham.

2. By calculation from our modern tables, it appears that the place of the ſtar Aldebaran, at the commencement of the Calyougham, differs only 53′ from what the Indian tables make it. He thinks this coincidence the more remarkable, as the bramins, by reaſon of the inacuracy of their own date, would have erred by four or five degrees, had they calculated from their moſt modern tables dated in 1491.

3. At the commencement of this epoch (which, ac-

cording to M. Bailly, happened at midnight between the 17th and 18th of February 3102 B. C.) the ſun was in $10^{s}\ 3^{\circ}\ 38'\ 13''$ by the Indian tables. But the mean longitude of the ſun, according to the tables of M. de la Caille, for the ſame time, comes out to be only $10^{s}\ 1^{\circ}\ 5'\ 57''$, ſuppoſing the preceſſion of the equinoxes to have been the ſame at that time as now. M. de la Grange, however, has demonſtrated, that, in former ages, the preceſſion of the equinoxes was leſs than at preſent; whence there ariſes an equation of $1^{\circ}\ 45'\ 22''$ to be added to the ſun's place already mentioned; and thus it will differ only 47′ from the radical place in the tables of Tirvalore. Notwithſtanding this reaſoning, however, Dr Playfair thinks that no ſtreſs is to be laid upon this argument, as it depends on the truth of a conjecture of M. Bailly that the place of the ſun abovementioned was not the mean but the true one.

4. The mean place of the moon at Benares, calculated from Mr Meyer's tables, for the 18th of February 3102 B. C. will be $10^{s}\ 0^{\circ}\ 51'\ 16''$, provided her motion had all that time been equable; but the ſame aſtronomer informs us, that the motion of the moon is ſubject to a ſmall but uniform acceleration, about $9''$ in 100 years; which in an interval of 4801 years, muſt have amounted to $5^{\circ}\ 45'\ 44''$; which added to the preceding, gives $10^{s}\ 6^{\circ}\ 37'$ for the true place of the moon at the commencement of the Calyougham. Now the place of this luminary, at that time, by the tables of Tirvalore, is $10^{s}\ 6^{\circ}$; the difference is leſs than two thirds of a degree, which, for ſo remote a period, and conſidering the acceleration of the moon's motion, for which no allowance could be made in an Indian calculation, is a degree of accuracy that nothing but actual obſervation could have produced.—This concluſion is confirmed by a computation of the moon's place from all the tables to which the Indians could have any acceſs, and of which the enormous errors would inſtantly ſhow the deception. Thus, by the tables of Ptolemy, the place of the ſun would be $10^{\circ}\ 21'\ 15''$ greater; and that of the moon $11^{\circ}\ 52'\ 7''$ greater than has juſt been found from the Indian tables. By thoſe of Ulug Beg, the place of the ſun would be $1^{\circ}\ 30'$, and that of the moon 6°, different from what it is by the Indian tables: and in like manner our author ſhews that the Indian calculations could not be derived from any other ſet of tables extant. In like manner, he ſhows that, with regard to the mean place of the moon, there is a coincidence for a period of more than 4000 years between the tables of Meyer and thoſe of India named *Chriſnabouram*; which, though they bear a more modern date than thoſe of Tirvalore, are thus probably more ancient. "From this remarkable coincidence (ſays Dr Playfair), we may conclude, with the higheſt probability, that at leaſt one ſet of theſe obſervations on which the tables are founded, is not leſs ancient than the era of the Calyougham: and though the poſſibility of their being ſome ages later than that epoch is not abſolutely excluded, yet it may, by ſtrict mathematical reaſoning, be inferred, that they cannot have been later than 2000 years before the Chriſtian era.

5. Since the time that Mr Bailly wrote, every argument reſpecting the acceleration of the moon's motion has become more worthy of attention, and more concluſive. For the acceleration is no longer a mere empirical equation introduced to reconcile the ancient obſervations with the modern, nor a fact that can only be accounted for by hypothetical cauſes, ſuch as the reſiſtance of the ether, or the time neceſſary for the tranſmiſſion of gravity; but a phenomenon which M. de la Place has with great ability deduced from the principle of univerſal gravitation, and ſhown to be neceſſarily connected with the changes of eccentricity in the earth's orbit diſcovered by M. de la Grange: ſo that the action of the moon is indirectly produced by the action of the planets, which alternately increaſing and diminiſhing this eccentricity, ſubjects the moon to different degrees of that force by which the ſun diſturbs the time of her revolution round the earth. It is therefore a periodical inequality, by which the moon's motion, in the courſe of ages, will be as much retarded as accelerated; but its changes are ſo ſlow, that her motion has been conſtantly accelerated, even for a much longer period than that to which the obſervations of India extend—To M. de la Grange alſo we are indebted for one of the moſt beautiful of the diſcoveries in phyſical aſtronomy, viz. That all the variations in our ſyſtem are periodical; ſo that, though every thing, almoſt without exception, be ſubject to change, it will, after a certain interval, return to the ſame ſtate in which it is at preſent, and leave no room for the introduction of diſorder, or of any irregularity that might conſtantly increaſe. Many of theſe periods, however, are of vaſt duration. A great number of ages, for inſtance, muſt elapſe, before the year be exactly of the ſame length, or the ſun's equation be of the ſame magnitude, as at preſent. An aſtronomy, therefore, which profeſſes to be ſo ancient as the Indian, ought to differ conſiderably from ours in many of its elements. If, indeed, theſe differences are irregular, they are the effects of chance, and muſt be accounted errors; but if they obſerve the laws which theory informs us they do, they muſt be held as the moſt undoubted marks of authenticity.

6. Neither theſe tables of Tirvalore, nor the more ancient ones of Chriſnabouram, are thoſe of the greateſt antiquity in India. The bramins conſtantly refer to an aſtronmy at Benares, which they emphatically ſtyle the *ancient*; and which, they ſay, is not now underſtood by them, though they believe it to be much more accurate than that by which they calculate.

20 Concluſions by Dr. Playfair, concerning the Indian aſtronomy.

From theſe and other ſimilar arguments, Dr. Playfair draws the following concluſions with reſpect to Indian aſtronomy. 1. The obſervations on which it is founded, were made more than 3000 years before the Chriſtian era; and in particular the places of the ſun and moon, at the beginning of the Calyougham, were determined by actual obſervation. 2. Though the aſtronomy now in the hands of the bramins is ſo ancient in its origin, yet it contains many rules and tables that are of later conſtruction. 3. The baſis of their four ſyſtems of aſtronomical tables is evidently the ſame. 4. The conſtruction of theſe tables implies a great knowledge of geometry, arithmetic, and even the theoretical part of aſtronomy. All this, however, we find controverted, or at leaſt rendered ſomewhat doubtful, by William Marſden, Eſq. who has written a paper on the chronology of the Hindoos in the Philoſophical Tranſactions for 1790. "The *Kalee Yoog* (ſays he), or principal chronological era, began in the year 3102 B. C. according to the common method of computation,

21 Controverted by Mr. Marſden.

computation, or in 3101 according to the aſtronomical method, on the 18th of February, at ſun-riſe; or at midnight, according to different accounts, under their firſt meridian of *Lauka*.—At that period it is ſaid to be aſſerted by their aſtronomers, that the ſun, moon, and all the planets, were in conjunction according to their mean places. The reality of this fact, but with conſiderable modification, has received a reſpectable ſanction from the writings of an ingenious and celebrated member of the French academy of ſciences, who concludes that the actual obſervation of this rare phenomenon, by the Hindoos of that day, was the occaſion of its eſtabliſhment as an aſtronomical epoch. Although M. Bailly has ſupported this opinion with his uſual powers of reaſoning, and although abundant circumſtances tend to prove their early ſkill in this ſcience, and ſome parts of the mathematics connected with it; yet we are conſtrained to queſtion the verity or poſſibility of the obſervation, and to conclude rather that the ſuppoſed conjunction was, at a latter period, ſought for as an epoch, and calculated retroſpectively. That it was widely miſcalculated too, is ſufficiently evident from the computation which M. Bailly himſelf has given of the longitudes of the planets at that time, when there was a difference of no leſs than 73° between the places of Mercury and Venus. But fifteen days after, when the ſun and moon were in oppoſition, and the planets far enough from the ſun to be viſible, he computes that all, except Venus, were comprehended within a ſpace of 17°; and on this he grounds his ſuppoſition of an actual obſervation.

“In their current tranſactions the inhabitants of the peninſula employ a mode of computation of a different nature, which, though not unknown in other parts of the world, is confined to theſe people among the Hindoos. This is a cycle, or revolving period, of 60 ſolar years, which has no farther correſpondence with their other eras than that of their years reſpectively commencing on the ſame day. Thoſe that conſtitute the cycle, inſtead of being numerically counted, are diſtinguiſhed from each other by appropriate names, which in their epiſtles, bills, and the like, are inſerted as dates, with the months, and perhaps the age of the moon annexed; but in their writings of importance and record, the year of *Salaban* (often called the *Saka* year) is ſuperadded; and this is the more eſſential, as I do not find it cuſtomary to number the cycles by any progreſſive reckoning. In their aſtronomical calculations we obſerve, that they ſometimes complete the year of their era by multiplying the number of cycles elapſed, and adding the complement of the cycle in which it commenced, as well as the years of the current cycle; but from hence we are led to no ſatisfactory concluſion concerning this popular mode of eſtimating time. The preſumption is in favour of its being more ancient than their hiſtorical epochs. The preſent cycle, of which forty-three complete years were expired in April 1790, began in 1747, with the year of Salaban 1669, and of the grand era 4848. M. le Gentil, to whom Europe is chiefly indebted for what is known of Hindoo aſtronomy, has fallen into an unaccountable error with regard to the years of this cycle, and their correſpondence with thoſe of the Kalee Yoog, as appears by the comparative table he has given of them, and other paſſages of his work. He ſeems to have taken it for granted, without due examination, that the year 3600 of the latter muſt have been produced by the multiplication of the cycle of 60 into itſelf; and conſequently that the firſt year of this grand era muſt likewiſe have been the firſt of the cycle. But this is totally inconſiſtent with the fact; the Kalee Yoog began the thirteenth year of the cycle of 60; and all the reaſoning founded on the ſelf-production and harmony of theſe periods muſt fall to the ground.”

From what Mr Marſden here ſets forth, it is plain that we muſt make very conſiderable abatements in our confidence of the extreme antiquity of the Hindoos obſervations. Indeed we can ſcarce conceive a poſſibility of reconciling ſuch extravagant antiquity with the authentic hiſtories of which we are poſſeſſed, or with thoſe of ſcripture. The want of an ancient hiſtory of Hindoſtan leaves us indeed in the dark, and gives room for ingenious and ſpeculative men to indulge themſelves in marvellous reveries concerning their antiquity. But the flood, we know, which if it exiſted at all, could not be but general over the whole earth *, muſt have deſtroyed every monument of art and ſcience; and it is ſurely more reaſonable to believe, that M. le Gentil, or the moſt learned man in the preſent age, has been miſtaken (even though we ſhould not be able to determine the particular manner), than at once to deny the authenticity of all hiſtory both ſacred and profane, and attempt to evade evidence which no power of reaſoning can ever ſet aſide.

22 Great ſkill of the Hindoos in geometry.

It is, however, undeniable, that the progreſs of the Hindoos in geometry as well as aſtronomy has been very great in ancient times. Of this a moſt remarkable inſtance is given by Dr Playfair, in their finding out the proportion of the circumference of a circle to its diameter to a great degree of accuracy. This is determined, in the *Ayeen Akbary*, to be as 3927 to 1250; and which, to do it arithmetically in the ſimpleſt manner poſſible, would require the inſcription of a polygon 768 ſides; an operation which cannot be performed without the knowledge of ſome very curious properties of the circle, and at leaſt nine extractions of the ſquare root, each as far as ten places of decimals. This proportion of 1250 to 3927 is the ſame with that of 1 to 3.1416; and differs very little from that of 113 to 155 diſcovered by Metrus. He and Vieta were the firſt who ſurpaſſed the accuracy of Archimedes in the ſolution of this problem; and it is remarkable that theſe two mathematicians flouriſhed at the very time that the Ayeen Akbary was compoſed among the Hindoos.—In geography, however, they are much deficient: and it is very difficult to find out the true ſituation of the meridians mentioned by their authors from what they have ſaid concerning them.

23 Painting, Sculpture &c.

The art of painting among the Hindoos is in an imperfect ſtate; nor are there any remains of antiquity which evince its ever being more perfect than it is juſt now. Their principal defect is in drawing, and they ſeem to be almoſt totally ignorant of the rules of perſpective. They are much better ſkilled in colouring; and ſome of their pictures are finiſhed with great nicety. Their ſculptures are likewiſe rude, and greatly reſemble thoſe of the Egyptians. They ſeem to follow no regular rules in architecture: their temples indeed are filled with innumerable columns, but moſt of them without any juſt ſhape or proportion. They are principally remarkable for their immenſe ſize, which gives them an air of majeſty and grandeur.

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* See the article *Deluge*.

24 Muſic. The muſic of the Hindoos is but little known to Europeans; and the art ſeems to have made but little progreſs among them in compariſon with what it has done in the weſtern countries; though ſome of the Indian airs are ſaid to be very melodious. Their muſical inſtruments are very numerous: in war they uſe a kind of great kettle drum named *nagar,* carried by a camel, and ſometimes by an elephant. The dole is a long narrow drum ſlung round the neck; and the tam-tam is a flat kind of drum reſembling a tabor, but larger and louder. They uſe alſo the cymbal, which they name *talan;* and they have various ſorts of trumpets, particularly a great one named *tary,* which emits a moſt doleful ſound, and is always uſed at funerals, and ſometimes to announce the death of perſons of diſtinction.

25 Jugglers, and enchanters of ſerpents. The jugglers among the Hindoos are ſo expert, that many of the miſſionaries have aſcribed their tricks to ſupernatural power; and even ſo late a traveller as Mr Groſe ſeems to be not of a very different opinion†. Like the Egyptians, they ſeem to have the power of diſarming ſerpents of their poiſon; and there are many ſtrollers who go about with numbers of theſe animals in bags, having along with them a ſmall bagpipe called *magouty,* which they pretend is uſeful to bring them from their lurking places. They take the ſerpents, though of the moſt poiſonous kinds, out of the bags with their naked hands, and throw them on the ground, where they are taught to rear and move about to the ſound of their muſic. They ſay that this is accompliſhed by means of certain incantations.

† See *Ordeal.*

26 Antiquity of fire-arms among the Hindoos. The uſe of fire-arms appears to have been of great antiquity in India. They are prohibited by the code of Gentoo laws, which is certainly of a very ancient date. The phraſe by which they are denominated is *agneeaſter,* or weapons of fire; and there is alſo mention made of *ſhet agnee,* or the weapon that kills an hundred men at once. It is impoſſible to gueſs at the time when thoſe weapons were invented among the Hindoos; but we are certain, that in many places of the eaſt, which have neither been frequented by Mohammedans nor Europeans, rockets are almoſt univerſally made uſe of as weapons of war. The Hindoo books themſelves aſcribe the invention of fire-arms to *Baeſhkookerma,* who formed all the weapons made uſe of in a war betwixt the good and evil ſpirits. Fire-balls, or blue lights, employed in beſieged places in the night-time, to obſerve the motions of the beſiegers, are met with every where through Hindoſtan, and are conſtructed in full as great perfection as in Europe. Fireworks alſo are met with in great perfection; and, from the earlieſt ages, have conſtituted a principal article of amuſement among the Hindoos. Gun-powder, or a compoſition ſomewhat reſembling it, has been found in many other places of the eaſt; particularly China, Pegu, and Siam; but there is reaſon to believe that the invention came originally from Hindoſtan. Poiſoned weapons of all kinds are forbidden in this country.

27 Ingenuity in various arts. The Hindoos are remarkable for their ingenuity in all kinds of handicraft; but their utenſils are ſimple, and in many reſpects inconvenient, ſo that incredible labour and patience are neceſſary for the accompliſhment of any piece of work; and for this the Hindoos are very remarkable. Lacquering and gilding are uſed all over the country, and muſt have been uſed in very early ages; though in ſome places the lacquering is brought to much greater perfection than in others.

28 Culture of rice. The principal article of food throughout all Hindoſtan is rice, and of conſequence the cultivation of it forms the principal object of agriculture. In this the moſt important requiſite is plenty of water; and when there happens to be a ſcarcity in this reſpect, a famine muſt be the conſequence. To prevent this as far as poſſible, a vaſt number of tanks and water-courſes are to be met with throughout the country, though in ſome places theſe are too much neglected, and gradually going to decay. After the rice is grown to a certain length, it is pulled up, and tranſplanted into fields of about 100 yards ſquare, ſeparated from each other by ridges of earth; which are daily ſupplied with water let in upon them from the neighbouring tanks. When the water happens to fall below the level of the channels made to receive it, it is raiſed by a ſimple machine named *picoti,* the conſtruction of which is as follows. A piece of timber is fixed upright in the ground, and forked ſo as to admit another piece to move tranverſely in it by means of a ſtrong pin. The tranſverſe timber is flat on one ſide, and has pieces of wood acroſs it in the manner of ſteps. At one end of this timber there is a large bucket, at the other a weight. A man walking down the ſteps throws the bucket into the well or tank; by going up, and by means of the weight, he raiſes it; and another perſon ſtanding below empties it into a channel made to convey the water into the fields. The man who moves the machine may ſupport himſelf by long bambooos that are fixed in the way of railing from the top of the piece of upright timber towards the wall.

29 Account of the Banjaries. A number of other kinds of grain are to be met with in Hindoſtan, but wheat is not cultivated farther ſouth than 18° latitude. It is imported, however, to every part of the country by the Banjaries. Theſe are a ſet of people belonging to no particular caſt, who live in tents, and travel in ſeparate bodies, each of which is governed by its own particular regulations. They frequently viſit towns on the ſea-coaſt, with bullocks loaded with wheat and other articles; carrying away in exchange ſpices, cloths, but eſpecially ſalt, which they carry into the inland parts of the country. Some of their parties have ſeveral thouſands of oxen belonging to them. They are rarely moleſted, even in time of war, otherwiſe than by being ſometimes preſſed into the ſervice of an army to carry baggage or proviſions; but for this they are paid, and diſmiſſed as ſoon as the ſervice is over. The Hindoos themſelves are prohibited from going out of the country, under the ſevereſt of all penalties, that of loſing their caſt. Notwithſtanding this, however, it is certain that they do ſettle in foreign parts in the character of merchants and bankers. Perhaps theſe may have a toleration from the principal bramin, or there may be an exemption for people of their profeſſion; but this is not known. At any rate, wherever they go, they appear inviolably attached to their religious ceremonies, and refuſe to eat what is prohibited to them in their

30 Miſerable ſtate of the huſbandmen.

their own country. The Ryots, or people who cultivate the ground, are in many places in the moſt miſerable ſituation; their only food being ſome coarſe rice and pepper, for which they are obliged to endure all the inclemencies of a burning ſun, and the inconveniences which attend alternately wading in water and walking with their bare feet on the ground heated intenſely by the ſolar rays; by which they are frequently bliſtered in a miſerable manner. All this, however, they ſubmit to with the utmoſt patience, and without making any complaint, expecting to be releaſed from their ſufferings by death; though even then their religion teaches them to hope for nothing more than what they call *abſorption into the eſſence of the Deity*; a ſtate almoſt ſynonomous with what we call *annihilation*.

HINDOSTAN, a celebrated and extenſive country of Aſia, bounded on the north by Great and Little Thibet; on the ſouth, by the hither peninſula of India, part of the Indian Sea, and Bay of Bengal; on the weſt, by Perſia; and on the eaſt, by Thibet and the farther peninſula. It is ſituated between 84° and 102° of eaſt longitude, and between 21° and 36° of north latitude; being in length about 1204 miles, and in breadth 960; though in ſome places much leſs.

31 Derivation of the names.

2 Herodotus's account of India.

3 The knowledge of the Greeks augmented by Alexander's expedition.

This country was in early times diſtinguiſhed among the Greeks by the name of *India*, the moſt probable derivation of which is from *Hind* the Perſian name. We are aſſured by Mr Wilkins, that no ſuch words as *Hindoo* or *Hindoſtan* exiſts in the Sanſcrit or learned language of the country; in which it is named *bharata*, a word totally unknown to Europeans. The firſt accounts we have of Hindoſtan are from Herodotus, who lived 113 years before the expedition of Alexander the Great. His accounts, however, convey very little information, as he appears only to have heard of the weſtern part of the country, and that on account of its being tributary to Perſia. He informs us, that Darius Hyſtaſpes, about 508 B. C. had ſent Scylax of Caryandria to explore the river Indus. He ſet ſail from Caſpatyrus, a town near the ſource of the Indus, and the territories of *Pactya* (which major Rennel ſuppoſes to be the modern *Pehkely*(,and continued his courſe eaſtward to the ſea; then altering his courſe to the weſt, he arrived at that place where the Phœnicians had formerly ſailed round the continent of Africa; after which Darius ſubdued the Indians, and became maſter of that ſea. The northern inhabitants of India, he ſays, reſembled the Bactrians in their manners, and were more valiant than the reſt; thoſe far to the ſouthward were as black as the Ethiopians, killed no animals, but lived chiefly upon rice: and clothed themſelves with cotton. By the expedition of Alexander, the Greeks acquired a little more knowledge of the country of Hindoſtan, though he did little elſe than march over the tracts deſcribed by Herodotus. He was informed of the exiſtence of the river Ganges, which had not been known to Herodotus; and the ſtory of his ſuppoſing that he had diſcovered the ſource of the Nile, when near the head of the Indus, is well known, as well as his ſurpriſe and conſternation when he arrived at the mouth of that river, on account of the high tides. Major Rennel is of opinion that both theſe ſtories are falſehoods. He thinks it impoſſible that Alexander could have been ignorant of the writings of Herodotus, who gave an account of the diſcoveries of Scylax; and with regard to the other circumſtance he expreſſes himſelf as follows. "The ſtory of Alexander's ſurpriſe at ſeeing the tides in the Indus, appears to me equally improbable; ſeeing that the ſame Herodotus, book iii. ſpeaks very particularly of the tides in the Red Sea, and deſcribes them as being not only ſtrong, but ebbing and flowing every day. (That moſt intelligent and ingenious traveller M. Volney informs us, that the tide ebbs and flows three feet and an half at Suez). Arrian takes no notice of the tides until Alexander's fleet had arrived near the mouth of the river. It is true, the tide in the Indus does not go up ſo high as in other rivers of equal bulk, and that run on ſo ſmall a deſcent; but nevertheleſs, as the tide is perceptible at 50 or 60 miles above the river's mouth, we may conclude, that it could hardly eſcape the notice of Alexander and his people in their voyage from Pattala to the ſea, ſuppoſing they had not been appriſed of the circumſtance. Beſides, Arrian's account of the tide which did ſo much miſchief to the fleet, is deſcriptive of the *bore*, or ſudden influx of the tide, in a body of water elevated above the common ſurface of the ſea; ſuch as occurs in the Ganges, &c. He ſays, thoſe ſhips which lay upon the ſand were ſwept away by the fury of the tide; while thoſe that ſtuck in the mud were ſet afloat again without any damage. To the generality of readers no reaſon will appear why the circumſtances of the ſhips ſhould be different in the mud and on the ſand: the fact is, that the bottoms of channels in great rivers are muddy, while their ſhallows are formed of ſand; and it is the nature of the bore to take the ſhorteſt cut up a river, inſtead of following the windings of the channel; conſequently it muſt croſs the ſand-banks it meets in its way, and will alſo prove more deſtructive to whatever it meets with a-ground than what is a-float." For an account of the exploits of Alexander in Hindoſtan, ſee the article MACEDON.

4 Hiſtory from the time of Alexander to that of the Mogul Mohammedans.

The Grecian expedition into India ſoon excited a general curioſity in the Europeans to become acquainted with a country ſo wealthy and ſo remote. Megaſthenes, the ambaſſador of Seleucus, reſided long at Palibothra the capital of an Indian nation, and from him the ancient writers learned moſt of what they knew concerning that part of the world. He lived about 300 years before the Chriſtian era, and kept a journal during the time he reſided in India.

For ſome ſhort time the weſtern provinces of India continued ſubject to the Syrian empire founded by Seleucus; but he quickly ceded theſe diſtant countries to one Sandrocottus, who gave him only 500 elephants in exchange. Soon after this the province of Bactria likewiſe became independent; and thus the connection betwixt India and the weſtern parts of the world was entirely diſſolved, and we are almoſt entirely ignorant of the tranſactions of that country till the time of the Mohammedan conqueſt. That the extenſive country we now call *Hindoſtan* was divided among many different nations, we have no reaſon to doubt; but major Rennel is of opinion, that however this might be the caſe, there was generally a large empire or kingdom, which occupied the principal part of that immenſe valley through which the Ganges took its courſe; the capital of which has fluctuated between Delhi and Patna, as the limits of the empire have varied. This was named the kingdom of the *Parſij* or *Gangaridæ* in the times of Alexander and Megaſthenes. Major Rennel is of opinion that it extended weſtward to the Panjab country; and he alſo thinks it probable that the capital named *Palibothra* ſtood on the ſame ſpot which is now occupied by the city of Patna. The kingdom, according to this ſuppoſition, would occupy part of Bengal; and he thinks that it could not be leſs than that of France. It was on the borders of this kingdom that Alexander's army mutinied and refuſed to proceed any farther. Arian informs us, that the people were rich, excellent ſoldiers, and good huſbandmen; that they were governed by nobility, and that their rulers impoſed nothing harſh upon them.

5
No ancient Hindoo hiſtory to be credited.

The Hindoos themſelves pretend to an extravagant antiquity; but we are informed by major Rennel, that "there is no known hiſtory of Hindoſtan (that reſts on the foundation of Hindoo materials or records) extant before the period of the Mahommedan conqueſts; for either the Hindoos kept no regular hiſtories, or they were all deſtroyed, or ſecluded from common eyes by the Pundits. We may judge of their traditions by that exiſting concerning Alexander's expedition; which is, that he fought a great battle with the emperor of Hindoſtan near Delhi, and though victorious, retired to Perſia acroſs the northern mountains; ſo that the remarkable circumſtance of his ſailing down the Indus, in which he employed many months, is ſunk altogether. And yet, perhaps, few events of ancient times reſt on better foundations than this part of the hiſtory of Alexander, as appears by its being ſo highly celebrated, not only by cotemporaries, but by ſeveral of the moſt eminent authors for ſome centuries following. The only traces of Indian hiſtory we meet with are in the Perſian hiſtorians. In the beginning of the 17th century, Mahommed Feriſhta compoſed an hiſtory of Hindoſtan, moſt of which was given in that of colonel Dow, publiſhed upwards of 30 years ago; but with regard to the early part of it, major Rennel is of opinion that it cannot at all be depended upon.

6
Expeditions of Mahmud Gazni into India.

The authentic hiſtory of Hindoſtan commences with the conqueſts of Mahmud or Mahmood Gazni, about the year 1000. His kingdom had ariſen out of that of the Saracens, who under the khaliff Al Walid had extended their conqueſts immenſely both to the eaſt and weſt. Mahmud was the third from Abiſtagi a governor of Khorazan, who had revolted from the king of Bakharia. He poſſeſſed great part of the country formerly known by the name of *Bactria*. Gazni, Gazna, or Ghizni, was the capital; a city which ſtood near the ſource of the Indus, though Balkh likewiſe claimed this honour. Subuctagi, the father of Mahmud, had projected the conqueſt of the weſtern part of India; but dying before he could put his deſigns in execution, Mahmud took upon himſelf the conduct of the expedition; but previous to his invaſion of India, he ſtrengthened himſelf by the conqueſt of the whole of the ancient Bactria. His firſt invaſion took place in the year 1000; during which he made no farther progreſs than the province of Moultan. That part of the country was inhabited by the Kuttry and Rajpoot tribe, the Malli and Catheri of Alexander, who ſtill retained their ancient ſpirit, and made a very ſtout reſiſtance to the armies of that furious enthuſiaſt. As he was prompted to this undertaking no leſs by a deſire of exterminating the Hindoo religion than by that of conqueſt, a league was at laſt formed againſt him among the Indian princes from the banks of the Ganges to the Nerbudda. Their allied forces, however, were defeated, and the year 1008 was marked by the deſtruction of the famous temple of Nagracut in the Panjab country. Having ſatiated himſelf with plunder on this occaſion, Mahmud returned to his own country; but in 1011 invaded Hindoſtan once more, deſtroying Tanafar a city on the weſt of Delhi, and a more celebrated place of worſhip than Nagracut itſelf. Delhi was reduced on this occaſion; and in ſeven years after Canoge was taken; the temples of Matra or Methura, the Methora of Pliny, a city of great antiquity, and remarkable for a place of worſhip near Agra, were likewiſe demoliſhed; but he failed in his attempts on the Rajpoots of Agimere, either through their own valour or the ſtrength of their country. His 12th expedition took place in the year 1024, when he deſtroyed the celebrated temple of Sumnaut in the peninſula of Guzerat, adjoining to the city of Puttan on the ſea-coaſt, and not far from the iſland of Diu, now in the hands of the Portugueſe. In this expedition he proved very ſucceſsful, reducing the whole peninſula of Guzerat, with many cities, the temples of which he conſtantly deſtroyed; and indeed ſeemed no leſs pleaſed with the overthrow of the Hindoo religion than with the conqueſt of the country. At his death, which happened in 1028, he was poſſeſſed of the eaſtern and by far the largeſt part of Perſia, and nominally of all the provinces from the weſtern part of the Ganges to the peninſula of Guzerat; as well as thoſe lying between the Indus and the mountains of Agimere; but the Rajpoots in that country ſtill preſerved their independency, which they have done all along, even to the preſent time.

7
Diviſion of the empire of Gazna, and various conqueſts in Hindoſtan by different adventurers.

In the year 1158 the empire of Gazna fell to pieces from the ſame cauſes by which all other large and unwieldy ſtates have been deſtroyed. The weſtern and largeſt part, which ſtill retained the name of Gazna, was ſeized upon by the family of Gaurides, ſo named from Gaur or Ghor, a province beyond the Indian Caucaſus; while thoſe contiguous to both ſhores of the Indus were allowed to remain in the poſſeſſion of Chuſero or Cuſroe, whoſe capital was fixed at Lahore. In 1114 the poſterity of this prince were driven out of their territories by the Gaurides; by which means the Mahommedans became neighbours to the Hindoos, and in a ſhort time began to extend their dominions to the eaſtward. In 1194 Mahommed Gori penetrated into Hindoſtan as far as Benares, and repeated the ſame ſcenes of devaſtation which had formerly taken place under Mahmud Gazni. At this period major Rennel is of opinion, that the purity of the language of Hindoſtan began to decline, and continued to do ſo till it became what it is at preſent; the original dialect being what is called the Sanſcrit, and which is now a dead language. Mahommed Gori alſo reduced the ſouthern part of the province of Agemere, and the territory to the ſouth of the river Jumna, taking poſſeſſion of the ſtrong fortreſs of Gualior.

8 Firſt invaſion of the Moguls.

9 The country of Deccan conquered.

After his death in 1205, the empire of Gazna was again divided; and the Patan or Alghan empire was founded by Cuttub, who had the Indian part, the Perſian remaining to Eldoze. Cuttub fixed his imperial reſidence at Delhi; and in 1210 the greateſt part of Hindoſtan Proper was conquered by the emperor Altumiſh, the ſucceſſor of Cuttub. After his time the government of Bengal was always beſtowed upon one of the reigning emperor's ſons; and during his reign the bloody conqueror Jenghiz Khan put an end to the other branch of the Gaznian empire, known by the name of *Kharaſm*; of which revolution an account is given under the article Gazna; but Hindoſtan was at that time left undiſturbed. In 1242 the Moguls began to make irruptions into Indoſtan, but did not at this time make any permanent conqueſt. The country was now in much the ſame ſtate in which it had been before the invaſion of the Mahommedans, viz. divided into a great number of ſtates tributary to the emperor, but in a great meaſure independent; and which did not fail to revolt whenever a favourable opportunity offered. The kingdom of Malwa, which had been reduced by Cuttub in 1205, ſhook off the yoke in the year 1265, and the Rajpoots were on every occaſion ready to revolt, notwithſtanding that their country lay in the neigbourhood of the capital. The moſt dreadful maſſacres, rebellions, and confuſion, now took place, which from that period almoſt to the time that the Britiſh government commenced, make up the hiſtory of Hindoſtan. The empire being parcelled out among a ſet of rapacious governors, the people were reduced to the laſt degree of miſery, and were at laſt ſo far miſled as to imagine that it was their intereſt to take up arms in order to render theſe governors independent. Had the emperors of Hindoſtan conſulted their true intereſt, they would have given up the provinces which lay beyond the upper part of the Indus and the deſerts of Agimere; as theſe formed a barrier which could not eaſily be paſſed by any invader. By neglecting this precaution, however, they at laſt gave an opportunity to the Moguls to penetrate into their country; and theſe, after ſeveral invaſions, became at laſt ſo formidable, that they were permitted by the emperors, in the year 1292, to ſettle in the country. At this time the reigning emperor was Feroſe II. of the tribe of *Chilligi* or *Killigi*, ſo named from Killige near the mountains of Gaur; and in 1293 this emperor projected the conqueſt of the Deccan; by which was meant at that time all the territory lying to the ſouthward of the Nerbudda and Mahanada and Cattack rivers; an extent of dominion almoſt equal to all that he already poſſeſſed in Hindoſtan. Feroſe was incited to attempt this by the riches of one of the princes of Deccan; and the perſon who propoſed it was one Alla, governor of Gurrah, a country nearly bordering upon that which he was about to invade. Alla, having accompliſhed his undertaking, during which he amaſſed an incredible quantity of treaſure, depoſed and murdered the emperor, aſſuming to himſelf the ſovereignty of Hindoſtan. He then began a new plan of conqueſt; and the firſt inſtance of his ſucceſs was the reduction of Guzerat, a ſtrong fortreſs, which had hitherto remained independent, and, while it continued ſo, was a ſtrong obſtacle to his deſigns upon the Deccan. He next reduced Rantanpour and Cheitore, two of the ſtrongeſt forts in the Rajpoot country. In 1303 the city of Warangole, capital of a kingdom of the Deccan, named Tellingana, was reduced; but in the midſt of theſe conqueſts the Moguls invaded the country from an oppoſite quarter, and plundered the ſuburbs of Delhi. Notwithſtanding this check the emperor reſumed his plan of conqueſt; the remainder of Malwa was ſubdued; and in 1306 the conqueſt of the Deccan was again undertaken. The conduct of the war was now committed to Cafoor; who not only carried his army into Dowlatabad, but in 1310, penetrated into the Carnatic alſo. The extent of his conqueſts in that country is not known; and indeed his expeditions ſeem to have been made with a view rather to plunder than to atchieve any permanent conqueſt. The quantity of riches he amaſſed was ſo great that the ſoldiers are ſaid to have carried away only the gold, leaving ſilver behind them as too cumberſome. As the treaſure carried off on this occaſion had been accumulating for a number of ages, it is probable that the country had long remained in a ſtate of tranquillity.

10 Revolts and confuſion throughout the whole empire.

11 Conqueſts and maſſacres of Tamerlane

Cafoor ſtill proceeding in his conqueſts, ravaged a ſecond time the northern part of the Deccan, and obliged the inhabitants of Tellingana and the Carnatic to become tributary to him. Rebellions took place in 1322; but the country was again reduced in 1326, and the whole Carnatic ravaged from one ſea to the other. This year Alla died, and his ſucceſſors, not being poſſeſſed of his abilities, were unable to retain the dominions he had left. Under the emperor Mohammed III. the people of the Deccan again revolted, and drove the Mohammedans ſo completely out of theſe countries, that nothing remained to them but the fortreſs of Dowlatabad. In 1344 the city of Biſnagar, properly *Bijinagur*, was founded by Belladeo the king of Deccan, who had headed the inhabitants in their late revolt. Mohammed in the mean time attempted to extend his dominions towards the eaſt; but while he employed himſelf in this, many provinces were loſt by rebellions in Bengal, Guzerat, and the Panjab. His ſucceſſor, Feroſe III. who aſcended the throne in 1351, ſeemed more deſirous of improving the remains of his empire than of extending it: and, during his reign, which continued for 37 years, agriculture and the arts were the favourite objects of his purſuit. After his death, in 1388, a rebellion and civil war took place, and continued for ſeveral years; and matters were brought to a criſis in the time of Mahmud III. who ſucceeded to the throne in 1393; and, during this time the empire of Hindoſtan exhibited the ſingular circumſtance of two emperors reſiding in the ſame capital, and in arms againſt each other. While matters remained in this ſituation, Tamerlane, after having ſubdued all the weſtern part of Tartary and Aſia, turned his arms againſt Hindoſtan in the year 1398. His conqueſt was eaſy, and his behaviour ſuch as rendered him worthy of the name by which he is yet known in Hindoſtan, "the deſtroying prince." After having brought into captivity a vaſt number of the poor inhabitants, he cauſed a general maſſacre to be commenced leſt they ſhould join the enemy in caſe of any ſudden emergency; and in conſequence of this cruel order, upwards of 100,000 were put to death in one hour. In the beginning of the year 1399 he was met by the Indian army, whom he defeated with great ſlaughter, and ſoon after made himſelf maſter of the imperial city of Delhi. At this time the capital conſiſted of three cities, named *Old Delhi, Seyri,* and *Jehan Penah.* Seyri was ſurrounded with a wall in the form of a circle; and Old Delhi was the ſame, but much larger, lying to the ſouthweſt of the other. Theſe two were joined on each ſide by a wall; and the third, which was larger than the other two, lay between them. As the city made no reſiſtance, there could not be a pretence for uſing the inhabitants with any cruelty; and thus matters paſſed on quietly till the 12th of January, when the Tartar ſoldiers inſulted ſome of the inhabitants at one of the gates. The Emirs were ordered to put a ſtop to theſe diſorders, but found it impoſſible. The Sultanas, having a curioſity to ſee the rarities of Delhi, and particularly a famous palace adorned with 1000 pillars built by an ancient Indian king, went in with all the court; and the gate being thus left open for every body, above 15,000 ſoldiers got in unperceived. But there was a far larger number of troops in a place between the cities abovementioned, who committed ſuch diſorders, that an inſurrection commenced; ſome of the inhabitants attacking them, while others, in deſpair, ſet fire to their houſes, and burnt themſelves with their wives and children. The ſoldiers, taking advantage of this confuſion, pillaged the houſes; while the diſorder was augmented by the admiſſion of more troops, who ſeized the inhabitants of the neighbouring cities that had fled to Delhi for ſhelter. The Emirs cauſed the gates to be ſhut; but they were quickly opened by the ſoldiers, who roſe in arms againſt their officers; ſo that, by the morning of the next day, the whole army was entered, and the city totally deſtroyed. Some ſoldiers carried off no fewer than 150 ſlaves, men, women, and children; nay, ſome of their boys had 20 ſlaves a piece to their ſhare. The other ſpoils in jewels, plate, and manufactures, were immenſe; for the Indian women and girls were all adorned with precious ſtones, and had bracelets and rings on their hands, feet, and even toes, ſo that the ſoldiers were loaded with them. On the 15th the Indians attempted to defend themſelves in the great moſque of old Delhi; but being attacked by the Tartars, they were all ſlaughtered, and towers erected. A dreadful carnage now enſued throughout the whole city, though ſeveral days elapſed before the inhabitants could be forced to quit it entirely; and as they went, the Emirs took many of them into their ſervice The artiſans were alſo diſtributed among the princes and commanders, all but the maſons, who were reſerved for the emperor, in order to build him a large ſtone moſque at Samarcand.

After this terrible devaſtation, Tamerlane marched into the different provinces of Indoſtan, every where defeating the Indians who oppoſed him, and ſlaughtering the Ghebrs or worſhippers of fire. On the 15th of March he retired, and thus ſet the miſerable inhabitants free from the moſt bloody conqueror that had ever invaded them. He did not, however, diſturb the ſucceſſion to the throne, but left Mahmud in quiet poſſeſſion of it, reſerving to himſelf only that of the Panjab country. The death of Mahmud, which happened in 1413, put an end to what is called the Patan dynaſty, founded by Cuttub in 1205. He was ſucceeded by Chizer, who derived his pedigree from the impoſtor Mohammed, and his poſterity continued to enjoy it till the year 1450; when Belloli, an Alghan of the tribe of Lodi, took poſſeſſion of it, the reigning prince Alla II. having abdicated the government. Under him all Hindoſtan was divided into ſeparate ſtates; and a prince, whoſe title was the *king of the Eaſt,* who reſided at Jionpour in the province of Allahabad, became ſo formidable, that the king of Delhi had only a ſhadow of authority remaining to him. A conſiderable part of the empire, however, was recovered by the ſon of Belloli; who, in the year 1501, fixed his royal reſidence at Agra. During his reign the Portugueſe firſt accompliſhed the paſſage to India by the Cape of Good Hope, but they had no connection with any other part of Hindoſtan than ſome maritime places in the Deccan which had always been independent of the court of Delhi. In 1516, during the reign of Ibrahim II. matters fell into ſuch confuſion that Sultan Baber, a deſcendant of Tamerlane, found means to conquer a very conſiderable part of the empire. His firſt expedition took place in the year 1518; and in the year 1525 he made himſelf maſter of Delhi. In his laſt invaſion he is ſaid to have brought with him only 10,000 horſe; having been furniſhed with the reſt by the diſaffected ſubjects of the emperor. During the five years that he reigned, his chief employment was the reduction of ſome of the eaſtern provinces, but he had not time to compoſe the diſturbances which took place throughout the whole of his dominions. On his death the ſeeds of rebellion, which Balier had not been able to exterminate, produced ſo many revolts and inſurrections, that his ſon Humaioon, though a prince of great abilities and virtue, was driven from the throne, and obliged to take ſhelter among the Rajpoot princes of Agimere, where he lived in great diſtreſs. During the time of his exile his ſon Ackbar was born, whom Mr Rennel looks upon to be one of the greateſt princes that ever ſat on the throne of Hindoſtan. The ſovereignty was held in the mean time by an uſurper, named Sheerkham, who in 1545 was killed at the ſiege of Cheitore, and buried in a magnificent mauſoleum, of which Mr Hodges lately exhibited a drawing in England. His territories, at the time of his death, extended from the Indus to Bengal; but ſo unſettled was the government, that after his deceaſe no fewer than five ſovereigns appeared in the ſpace of nine years. This induced a ſtrong party in Hindoſtan to recal Humaioon; but he lived only one year after his return.

12
Reign of Ackbar, a great prince.

In 1555, Humaioon was ſucceeded by his ſon Ackbar, at that time only 14 years of age. During his long reign of 51 years, he eſtabliſhed the empire on a more ſure foundation than it had probably ever been before; though even at this time Mr Rennel is of opinion, that all the tranquillity enjoyed by the people was merely that there was no actual rebellion. The firſt years of his reign were ſpent in reducing the provinces which had revolted from Agimere to Bengal; and the obedience of theſe he took care to ſecure as well as poſſible by a careful choice of governors; particularly by an unlimited toleration in religious matters, and an attention to the rights and privileges of the people. In 1585, he reſolved to invade the Deccan, which had hitherto reſiſted the power of the Mogul princes. The war continued for 20 years; during all which time no farther progreſs was made than the reduction of the weſtern part of Berar, Candeiſh, Tellingana (a diviſion of Golconda), and the northern part of Amednagur; the capital of which, alſo named *Amednagur*, was taken in 1601, after a long and bloody ſiege, and an unſucceſsful attempt of the princes of the Deccan to relieve it.

13
Bad conduct of his ſucceſſors

Under his ſucceſſor Jehan Guire, the project was but faintly carried on; the empire was diſturbed by the rebellion of Shah Jehan the emperor's ſon; and the influence of Noor Jehan his miſtreſs perplexed the councils of the nation. In the prince's reign Sir Thomas Roe, the firſt Engliſh ambaſſador, arrived at the court of Hindoſtan. The Portugueſe had now acquired conſiderable poſſeſſions in Guzarat and Bengal, but only thoſe in the former province attracted the attention of the court; ſo that the Perſian hiſtorian takes no notice of thoſe in Bengal. In the reign of Shah Jehan, who ſucceeded his father Jehan Guire in 1627, the conqueſt of the Deccan was more vigorouſly puſhed than before; and the war carried on in ſuch a deſtructive manner, that moſt of the princes in thoſe parts were fain to make ſubmiſſion to the emperor. During this reign a war took place with the Portugueſe, which ended in the expulſion of the latter from Hoogly on the Ganges. In his private character Shah Jehan was a very debauched and wicked prince, which gave occaſion to one of his ſons named *Aureng-zib* or *Aureng-zebe*, to dethrone him.

14
The empire raiſed to its greateſt height by Aurengzebe.

This prince attained his end by a train of deep hypocriſy and diſſimulation; covering his ambition with a pretence of religion, and under that pretence committing the greateſt crimes. He engaged in a war with two of his brothers, both of whom he defeated by unforeſeen accidents, when he himſelf ſeemed to be on the brink of deſtruction. Having at laſt got them into his power, he put them both to death, and then lamented their misfortune. One of his brothers who aſſiſted him, was rewarded firſt with impriſonment, and then with death. By the year 1660, he had attained full poſſeſſion of the ſovereignty, and from that time to the year 1678 there reigned a profound tranquillity throughout the whole empire. In the latter part of his reign he undertook the conqueſt of the Deccan, to which he was ſuppoſed to be incited by the reſolution and growing power of Sevagee, the founder of the Mahratta ſtate; and who, in that character, appeared almoſt as a rival to Aurengzebe himſelf. Having quelled a rebellion of the Patans, who lived beyond the Indus, he perſecuted the Hindoos to ſuch a degree, that the Rajpoot tribes in Agimere commenced a war againſt him. On this occaſion he headed his armies alſo in perſon; but having the misfortune to be hemmed in among the mountains, he would certainly have been taken priſoner, had not the enemy thought proper to allow him to eſcape. They allowed alſo the empreſs to make her eſcape after ſhe had been actually taken. In 1681 he renewed his incurſions into that country, took and deſtroyed Checture, committing other devaſtations, and every where deſtroying the Hindoo temples and objects of worſhip; but notwithſtanding all his efforts, he was at laſt obliged to abandon his enterpriſe, and allow them to remain in peace. From the year 1678 to the time of his death in 1707, he is ſaid to have been chiefly employed in the Deccan, the greateſt part of which he reduced, and for the laſt five years of his life is ſaid to have been actually employed in the field. This long abſence from his capital could not but be productive of bad conſequences. Rebellions broke out in various parts of the empire; and during this period, the Jats or Jauts firſt made their appearance in the province of Agra. They were at firſt only a ſet of banditti; but have ſince grown to be a very conſiderable ſtate, and once were of ſome conſequence in Upper Hindoſtan. After the 10th year of Aurengzebe's reign, however, we know very little of his tranſactions, as he would not allow any hiſtory of it to be written. At the time of his death the empire extended from the 10th to the 35th degree of latitude, and almoſt as many degrees in longitude. "His revenue (ſays major Rennel) exceeded 35 millions of pounds Sterling, in a country where the products of the earth are about four times as cheap as in England. But ſo weighty a ſceptre could be wielded only by a hand like Aurengzebe's: and we accordingly find, that in a courſe of 50 years after his death, a ſucceſſion of weak princes and wicked miniſters reduced this aſtoniſhing empire to nothing."

15
Its quick decline under his ſucceſſors.

Aurengzebe left four ſons; Mauſum, afterwards emperor, under the title of Bahader Shah; Azem, Kaum Buſh, and Acbar, who had been obliged to fly to Perſia 30 years before on account of his being engaged in rebellion againſt his father. A civil war inſtantly commenced between Azem and Mauzum; the event of which was decided in a great battle, where 300,000 combatants were brought into the field on each ſide. In this battle Azem was defeated and killed; after which Mauzuma aſcended the throne by the title of Bahader Shah. He was a prince of conſiderable abilities; but the diſorders of the empire were already riſen to ſuch a height, that during his ſhort reign of five years, he found it impoſſible to compoſe them. He was firſt engaged in war with his brother Kaum Buſh, whom he alſo defeated and killed; after which his attention was engaged by the Seiks, a new ſet of religioniſts, who, during the reign of Shah Jehan, had ſilently eſtabliſhed themſelves along the foot of the eaſtern mountains. They now appeared in arms in the province of Lahora, and ravaged the whole country from thence to the banks of the Jumna. The emperor marched againſt theſe adverſaries in perſon, and with great difficulty brought them under ſubjection. He then took up his reſidence at Lahore, where he died after a ſhort illneſs, without having ever viſited the imperial cities of Agra or Delhi.

After the death of Bahader Shah the empire was again conteſted among his four ſons. Of theſe the ſecond, named Azem Ooſhaun, took poſſeſſion of the treaſures; but was oppoſed by his three brothers, who agreed to divide the empire among them. Azem was defeated and killed in a battle, gained chiefly by the valour and conduct of the youngeſt named *Shah Jehan*; who ſeemed reſolved to abide by the agreement, and as a proof of his ſincerity, ordered the treaſures to be divided. This was prevented by the intrigues of Zoolfecar khan, an omrah in high truſt. A new civil war commenced, in which Shah Jehan was killed. The two remaining brothers tried their fortune in a third battle, which left Jehaunder, the eldeſt, in poſſeſſion of the throne. In nine months he was dethroned by Ferakſere, or Furrokſere, ſon to the deceaſed Azem Ooſhaun; having, during his ſhort reign, diſplayed almoſt unparalleled meanneſs of ſpirit.

This revolution was accompliſhed by the aſſiſtance of two brothers, Houſſein Ali Khan and Abdoolla Khan, who had extenſive governments in the eaſtern provinces. The calamities of the empire were not at all abated during this reign. In 1713 the Seiks appeared again in arms; and in 1716 were grown ſo formidable, that the emperor himſelf was obliged to march againſt them; but we are totally ignorant of the particulars of this campaign.

16 Firman granted to the Eaſt India company,

About this time the Engliſh Eaſt India company obtained the famous *Firman* or grant, by which their goods of export and import were exempted from duties or cuſtoms; which was regarded as the company's commercial charter in India, while they ſtood in need of protection from the princes of that country.

Ferokſere was depoſed, and his eyes put out by the two brothers who had raiſed him to the throne; and in the courſe of the ſame year two other emperors, whom they afterwards ſet up, were depoſed and murdered; and thus, in eleven years after the death of Aurengzebe, 11 princes of his line, who had either mounted the throne or been competitors for it, were exterminated, while the government declined with ſuch rapidity, that the empire ſeemed ready to be diſmembered to a greater degree than it had even been before the invaſion of Tamerlane. In 1718 the two brothers raiſed to the throne Mahommed Shah, the grandſon of Bahader Shah; but this prince having got ſufficient warning by the fate of his predeceſſors, took care to rid himſelf of theſe powerful ſubjects, though this could not be accompliſhed without a civil war. New enemies, however, ſtarted up. Nizam-al-Muluk, viceroy of the Deccan, had been for ſome time augmenting his power by every poſſible method, and was evidently aſpiring at independence. Having received ſome affronts from the two brothers, who for ſome time had ruled every thing with an abſolute ſway, he thought proper to retire to his government. In 1722 he was invited to court, and offered the place of vizier or prime miniſter, but declined accepting it, while the growing and formidable power of the Mahrattas furniſhed him with a pretext for augmenting his army. At laſt, having by the year 1738 attained a ſufficient degree of ſtrength to accompliſh his purpoſes, and confident of his having a large party at court, he came thither attended by a great body of armed followers.

17 Invaſion of Nadir Shah

Finding, however, that the intereſt of the emperor was ſtill too powerful for him, he invited the celebrated Perſian uſurper Nadir Shah; commonly known by the name of *Khouli Khan* to invade Hindoſtan. The invitation was accepted, and Nadir entered the country without oppoſition. The imperial general Douran being killed in a ſkirmiſh, no deciſive engagement took place; and the Perſian chief, though far advanced into Hindoſtan, yet looked upon matters to be ſo uncertain, that he offered to evacuate the country and retire for 50 lacks of rupees, about half a million ſterling. The intrigues of the Nizam and his party hindered the emperor from complying with this moderate demand; inſtead of which he abſurdly threw himſelf upon the uſurper's mercy, who then took poſſeſſion of Delhi, demanding a ranſom of 30 millions ſterling. At an interview with the emperor, he ſeverely reprimanded him for his miſconduct; however, he told him, that as he was of the race of Timur (Tamerlane), who had not offended the reigning family of Perſia, he would not take the empire from him; only as he had put him to the trouble of coming ſo far to ſettle his affairs, he inſiſted that his expences ſhould be paid. The unfortunate emperor made no anſwer to this ſpeech; but Nadir took care to enforce the latter part of it. Some time after the departure of the emperor, Nadir went to the camp to pay him a viſit; where he ſeized upon 200 cannon, with ſome treaſure and valuable effects, ſending them off immediately to Candahar. He then marched back to Delhi, where a mob aroſe about the price of corn. As Nadir Shah was endeavouring to quell it, a muſket was deſignedly fired at him, by which he narrowly eſcaped being killed.

18 Inhabitants of Delhi ſlaughtered.

Exaſperated at this, he commanded an indiſcriminate maſſacre to be made, which his cruel ſoldiery inſtantly put in execution with the greateſt alacrity, and 120,000, or, according to others, 150,000 of the miſerable inhabitants were ſlaughtered without mercy. This was followed by a ſeizure of all the jewels, plate, and valuable articles which could be found, beſides the exaction of the 30 millions, which was done with the utmoſt rigour; inſomuch that many of the inhabitants choſe rather to put an end to their own lives than to bear the torments to which they were ſubjected in caſe of inability to pay the ſum impoſed on them. During theſe horrid ſcenes, Nadir cauſed the marriage of his ſon to be celebrated with a grand daughter of Aurengzebe; and after having extorted every thing which he demanded, at laſt took leave of the emperor with every mark of friendſhip. He put the crown upon his head with his own hands; and after having given him ſome ſalutary advice relative to the government of his empire, he ſet out from Delhi on the 6th of May 1739.

19 Miſerable ſtate of Hindoſtan after his departure,

By this invaſion the empire ſuſtained prodigious loſs. Since the arrival of Nadir in Hindoſtan, about 200,000 people had been deſtroyed, and goods and treaſure carried off to the amount of 125 millions ſterling. Mohammed had ceded to the uſurper all the provinces of Hindoſtan ſituated to the weſt of the Indus. His departure left the Nizam in poſſeſſion of all the remaining power in the empire, which he inſtantly made uſe of to eſtabliſh himſelf in the ſovereignty of the Deccan. The province of Bengal had already become independent under Aliverdy Cawn, in the year 1738; and not long after, it was invaded by a vaſt army of Mahrattas under ſanction of the emperor's name; who being unable to ſatisfy them in the arrears of tribute he had been obliged to conſent to pay, ſent them into Bengal to collect for themſelves. About the ſame time, the Rohillas, a tribe from the mountains which lie between India and Perſia, erected an independent ſtate on the eaſt of the Ganges, within 80 miles of Delhi.

The total diſſolution of the empire ſeemed now to be faſt approaching. In the confuſion which took place after the murder of Nadir Shah, Abdallah, one of his generals, ſeized upon the eaſtern part of Perſia, and the adjoining provinces of India, which had been ceded to Nadir by Mohammed Shah; which he formed into a kingdom ſtill known by the name of *Candahar*

har or *Abdalli*; of which a more particular account is given in the ſubſequent part of this article.

This year Mohammed Shah died, after a reign of 29 years; which conſidering the fate of his immediate predeceſſors, and the anarchy univerſally prevalent throughout Hindoſtan, muſt be accounted very wonderful. He was ſucceeded by his ſon Ahmed Shah; during whoſe reign, which laſted about ſix years, the total diviſion of the remainder of the empire took place. Nothing now remained to the family of Tamerlane but a ſmall tract of territory round the city of Delhi, now no longer a capital, and expoſed to the repeated depredations of invaders, with conſequent maſſacres and famines. The laſt army which could with propriety be termed *imperial*, was defeated by the Rohillas in 1749; by which their independence was fully eſtabliſhed in the eaſtern parts of the province of Delhi. The Jauts, or Jats, a Hindoo tribe, eſtabliſhed themſelves in the province of Agra; the Deccan and Bengal were ſeized upon by their viceroys, Nizam and Aliverdy. Oude was ſeized on by Seifdar Jang (father to the late Sujah Dowlah); Allahabad by Mohammed Kooli. Maliva was divided between the Poonah Mahrattas and ſeveral native princes and Zemindars: Agimere reverted of courſe to its ancient lords, the Rajpoot princes; and the Mahrattas, in addition to their proper ſhare of Maliva, poſſeſſed the greateſt part of Guzerat, Berar, and Oriſſa; beſides their ancient dominions in the Deccan. Theſe people were now become ſo powerful, that they were alternately courted and employed by the contending parties, like the Swiſs in Europe; with this difference, that the Swiſs are paid by thoſe who employ them, whereas the Mahrattas always take care to repay themſelves. Abdalla having eſtabliſhed his empire in the manner above related, entered Lahore and Moultan, or the Panjab, with a view to conqueſt. "The whole country of Hindoſtan was in commotion (ſays Major Rennel) from one entrance to the other, each party fearing the machinations or attacks of the other; ſo that all regular government was at an end, and villany was practiſed in every form. Perhaps in the annals of the world it has ſeldom happened that the bonds of government were ſo ſuddenly diſſolved, over a portion of country containing at leaſt 60 millions of inhabitants."

20 First interference of the French and Engliſh in the affairs of Hindoſtan.

In 1748 the Nizam died at the age of 104, and was ſucceeded by his ſon Nazirjung, to the prejudice of his eldeſt brother Gazi, vizier to the nominal emperor. The conteſts that followed on this occaſion for the throne of the Deccan, and nabobſhip of Arcot, firſt engaged the French and Engliſh as auxiliaries on oppoſite ſides. This was followed by a long ſeries of hoſtilities, which terminated in the total expulſion of the French from Hindoſtan, the entire humiliation of the Mogul, and his being reduced to the ſtate of a mere tool of the Engliſh Eaſt Indian company; together with the ſubjection of a vaſt tract of country to the latter. Theſe tranſactions have occaſioned very conſiderable revolutions, not only in the country properly called *Hindoſtan*, but in other places of that extenſive tract called the *Eaſt Indies*: for ſome account of which ſee the article India.

21 Different powers among which Hindoſtan is divided.

The vaſt country of Hindoſtan is at preſent divided among the following powers.

1. Timur Shah, ſon of Ahmed Shah, or Abdallah, poſſeſſes an extent of territory to the north-weſtward before we come to the river Indus. This country, extending all the way betwixt India and Perſia, is known by the name of *Duran* or *Turan*; and was poſſeſſed by the Afghans, of whom Abdallah became the ſovereign. He was deſcended from an illuſtrious family; and having the misfortune of being taken priſoner by Huſſein Khan, then chief of Kindahar, along with his brother Zulfecur Khan, they were releaſed by the celebrated Nadir Shah in his paſſage through that country to Hindoſtan; but as that conqueror ſtill looked upon them with a jealous eye on account of their great influence with their countrymen, both were ſent to Mazandaran in Perſia. Here Zulfecur Khan, the brother of Ahmed, died; and, ſome time after, we find the latter promoted to the command of a body of Afghan cavalry in the Perſian army. He continued attached to the intereſts of Nadir while that conqueror lived; and even attempted, though ineffectually, to revenge his death. Proving unſucceſsful in this attempt, he returned to his own country; and, arriving at Kandahar, was ſaluted chief of the Afghans. In the courſe of a few months he became maſter of all the countries which the Mogul had been obliged to cede to Nadir Shah; and, encouraged by the diſtracted ſtate of the affairs of Hindoſtan at that time, he croſſed the Indus, and plundered the country to the ſouth-eaſt. An indeciſive battle fought with the Indian army under the command of the prince royal and vizier, in which the latter was killed, obliged Ahmed to return to his own territories; but he ſoon undertook another expedition, in which he conquered the province of Lahore. In 1755 he returned; and after ſtaying ſome time at Lahore, marched to Delhi the capital, having been invited thither, as was ſuppoſed, by the Mogul himſelf, in order to get rid of the tyranny of his vizier. The latter was accordingly deſerted in a battle by orders of the emperor, and obliged to ſurrender himſelf priſoner: but inſtead of being put to death, he had the addreſs to ingratiate himſelf with the conqueror; and the unfortunate Allumghire, the Mogul, was obliged to ſubmit to be ruled by him as before. Ahmed took care to indemnify himſelf for his trouble, by laying the city of Delhi under a heavy contribution; and having ſtaid for about a month, during which time he concluded a marriage betwixt his ſon Timur and the emperor's niece, he marched againſt a tribe of Hindoos named the *Jauts*, and conquered the greateſt part of the province of Agra. In this expedition he ſurpriſed the city of Matra, famous for being the birth-place of *Kriſhen*, the Apollo of the Hindoos; and ſacrificed to the *Gopia*, the muſes of the country. He failed in his attempt to ſurpriſe Agra through the reſolution of Fazil Cawn the governor; after which he led back his troops to Delhi, where he married the daughter of Mohammed Shah the late emperor, whom Allumghire had in vain ſolicited for himſelf.

Having ſettled his ſon Timur in the government of Lahore, Ahmed quitted Hindoſtan, and returned to his dominions, where he found every thing in confuſion. Timur, who during his father's abſence had been frequently diſturbed by the Seiks, a tribe of Hindoos who profeſs deiſm, was in 1760 driven out by a vaſt army of Mahrattas commanded by Roganaut Row the Paiſhwa's brother, of whom ſo much mention has already been made. Next year, however, Ahmed croſſed the Indus, and eaſily recovered his former territories; ſoon after which he became head of a league formed among ſome of the Indian princes, in order to oppoſe the overgrown power of the Mahrattas. In this enterpriſe he proved ſucceſsful; and overthrew the Mahrattas in a deciſive and very bloody battle, in which more than 50,000 of them were killed on the ſpot. The purſuit laſted ſeveral days, and their vaſt army was totally diſperſed; Ahmed being every where received with acclamations as the deliver of the faithful. In 1762 he again croſſed the Indus, with a view to conquer, or rather to exterminate, the Seiks, whoſe incurſions had become very troubleſome, and even dangerous, to his kingdom. Having defeated their army, and forced them to take refuge in the woods and ſtrong holds, he ſet a price on the heads of all thoſe who profeſſed their tenets; and that with ſuch ſucceſs, that heaps of them are ſaid to have been piled up in all the principal towns in theſe parts. At laſt, hearing that they had aſſembled in great numbers to celebrate an annual feſtival, he marched with an army to ſurpriſe them. The Seiks, however, were well provided for his reception, and an obſtinate battle enſued. During the time of the engagement an eclipſe of the ſun happened, which though diſregarded by the Seiks, greatly diſmayed the ſuperſtitious Mohammedans. Ahmed was therefore defeated; and though he frequently returned, was never able thoroughly to ſubdue that people. At laſt, having been long afflicted with an ulcer in his face, he died on the 15th of July 1773, at a place named *Kohtoba*, among the mountains of Kandahar, to which he had retired for the ſake of coolneſs, and was ſucceeded by his ſon Timur, who ſtill continues to enjoy the ſovereignty. The dominions of this prince extend a very conſiderable way to the northward of the Indus, but he poſſeſſes nothing in Hindoſtan beſides the province of Kaſhmire.

2. The Seiks inhabit a country on the other ſide of the Indus, and making part of Hindoſtan properly ſo called. They derive their origin from a Hindoo named *Nanuck* of the caſt of Khatry. His father, named *Baba Caloo*, poſſeſſed a ſmall diſtrict in the province of Lahore named *Telvandi*, where Nanuck was born in the year 1470. Like other founders of new ſects or nations, he is ſaid during his infancy to have given many indications of his future ſuperiority to the reſt of mankind. He ſeems, however, to have received no farther education than what was common to young men of his caſt; *viz.* reading, writing, and arithmetic, and hearing the ſaſtras or commentaries on the ſacred books. In his early youth he was married to a woman of his own caſt, by whom he had two ſons. Being a convert to the worſhip of the Inviſible, or deiſm, he accuſtomed himſelf to declaim againſt the folly of worſhipping idols, and the impiety of paying adoration to any but the ſupreme Being. At the age of 25 he left his family to viſit Bengal and the eaſtern parts of Hindoſtan; in a ſecond journey he viſited the ſouth, and in a third he went as far as Perſia and Arabia. On his return from this laſt journey, he expreſſed a deſire of remaining in his native country; and was furniſhed, according to his wiſh, with a piece of ground on the banks of the river Bavy, about 80 miles north-eaſtward from the city of Lahore. Here he took up his reſidence for the reſt of his days; chooſing to be free from the cares of this world, he dwelt at a diſtance from his wife and children, who came occaſionally to viſit him. Having acquired great reputation for his piety, wiſdom, and learning, he died at the age of 70; and ſince his death the place of his abode has obtained the name of *Dihra Daira*, or "the place of worſhip." His eldeſt ſon founded a ſect of devotees named *Nanuck Shoiy*; but his ſecond employed himſelf in the uſual occupations of mankind. On account of the oppreſſion of the Mohammedan governors, however, he removed from Telvandi, the eſtate of his anceſtors, and ſettled at Kartarpour, which his deſcendants ſtill poſſeſs. They are reſpected by the Seiks on account of their being the poſterity of Nanuck, but are not held in any veneration on a religious account.

The doctrines of Nanuck were taught by a favourite diſciple of his named *Lhina*, but on whom he beſtowed on his death-bed the appellation of *Angud*. By him the doctrines of the ſect were collected in a work named *Pothy*, or "the book;" and an hiſtory of the life of Nanuck himſelf was given in another named *Jenum Sakky*. Both theſe were written in a particular kind of character called *Gour Mouekty*, and ſaid to have been invented by Nanuck himſelf. Angud named for his ſucceſſor another diſciple called *Amerdoſs*; and this method of continuing the ſucceſſion ſeems to have been practiſed as long as the diſciples continued to own one ſupreme chief.

For many years the Seiks lived in peace, and gained the good-will of the Mohammedan governors by their quiet and inoffenſive behaviour. By degrees their numbers and their power greatly increaſed, but in proportion to their good fortune, they ſeem to have loſt their virtue; ſo that their gourous, or chiefs, who had hitherto borne the character of apoſtles, at laſt ſtood forth as military leaders. The firſt of theſe was named *Taigh*, whoſe ſucceſſor, named *Govand Sing*, was the tenth and laſt of the gourous. He engaged in a rebellion againſt the government; but was at laſt obliged to ſubmit, and even attended the emperor Bahader Shah in perſon. At laſt he was aſſaſſinated by a Petan ſoldier, not without a ſuſpicion of the emperor himſelf being concerned. As he did not name a ſucceſſor, his followers choſe a chief for themſelves named *Banda*, who ſoon began to make depredations on his neighbours; but being at laſt taken priſoner, and ſent to Delhi with his family and many of his countrymen, they were all put to an ignominious death. By this execution the Seiks were ſo much exaſperated, that they ſwore eternal vengeance againſt the Mohammedans, and have ever ſince manifeſted a moſt implacable hatred againſt them. Taking advantage of the diſtraction of the Mogul empire by the invaſion of Nadir Shah, they conquered ſeveral provinces. Wherever they came they threw down the moſques, and obliged every one to quit the country who refuſed to embrace their tenets. Their war with Ahmed Shah has been already mentioned. Since his death they have recovered all the territories they loſt during their conteſt with him; and now poſſeſs the greateſt part of Moultan, as well as ſeveral diſtricts in the province of Delhi; including in their territories the whole of that rich country named the *Panjab*, on account of five rivers which deſcend from the northern mountains, and incloſe or interſect it, running afterwards into the Indus.

The Seiks, as has already been mentioned, worſhip one God. but without image, or believing in any mediator. They eat all kinds of meat except beef; ſparing the black cattle, in all probability on account of their utility. Pork is very generally eaten probably on account of its being forbidden by the Mohammedans. They are commonly dreſſed in blue, a colour reckoned unlucky by the other Hindoos. Their dreſs conſiſts of blue trowſers of cotton, a ſort of plain generally chequered with blue and thrown over the right ſhoulder with a blue turban. Their government is lodged in an aſſembly of different chiefs; but who, as individuals, are independent of one another, and have ſeparate territories They meet annually, or oftener if occaſion requires, at a place called *Antherſer*, which is held in a kind of religious veneration; where there is a large tank lined with granite and ſurrounded with buildings, and beautifully ornamented. Their force is very conſiderable, amounting to no fewer than 200,000 cavalry. However, they can ſeldom be brought to act in concert, unleſs the whole nation be threatened with ſome imminent danger. They are a ſtrong hardy race of men, and capable of bearing much fatigue; and ſo expert in war, that of late almoſt all the neighbouring countries have been laid under contribution by them, ſeveral petty chiefs having conſented to pay them a ſmall annual tribute in order to avoid their incurſions. When in the field, none but the principal officers have tents, and thoſe extremely ſmall, ſo that they may be ſtruck and tranſported with the greater quickneſs and facility. In cold weather the ſoldiers wrap themſelves during the night in a coarſe blanket, which in the time of marching is folded and carried on their horſe. Their country is well cultivated, populous, and abounding in cattle, particularly horſes, which are reckoned the beſt in all Hindoſtan. This may probably be owing to the ſtuds which were formerly eſtabliſhed in different places of the province of Lahore on account of the Mogul himſelf. Stalions were ſent thither from Perſia and Arabia, and there was a fixed order to ſend to the ſtuds in Lahore all ſuch Arabian and Perſian horſes as by any accident ſhould be rendered unfit for mounting. Notwithſtanding their deiſm, the Seiks are ſaid to have a ſuperſtitious veneration for their ſword; inſomuch, that before one of them will eat with a perſon of another religion, he draws his ſword, and paſſing it over the victuals, repeats ſome words of prayer, after which he will freely partake of them. Contrary to the practice of all the other Hindoos, they diſlike the ſmoking of tobacco, but many of them ſmoke and chew bang, which ſometimes produces a degree of intoxication.

3. The provinces of Delhi have, in the courſe of a few years, frequently changed their maſters, but have ſcarce at any period during that time been under the authority of the ſovereign. Their laſt governor was named *Nadjiff Khan*, under the title of generaliſſimo of the emperor. He was involved in the ruin of Mohammed Kouly Khan, couſin to Soujah al Dowlah; after which he went to Coſſim Aly Khan nabob of Bengal; after whoſe expulſion he retired with a party of horſe to Bundelcund into the ſervice of Rajah Coman Sing. He next joined the Engliſh; and at laſt became the general of Shah Allum. With a body of Engliſh ſeapoys who had been put under his command, and ſome other troops whom he had taken into his ſervice, he ſubdued the countries near Delhi, conquered almoſt all the territories of the Jauts, reducing the cities of Agra, Dieg, and other principal towns. Theſe conqueſts were indeed effected in the name of the Mogul, but he derived little benefit from them; Nadjiff being the real maſter, and keeping poſſeſſion of them till his death, which happened in 1782; and ſince that time the countries we ſpeak of have been involved in a ſcene of continual anarchy and bloodſhed.

4. Next to the provinces of Delhi are the dominions of the independant rajahs, whoſe dominions lie contiguous to one another. The principal are thoſe of Joinagar or Jaypour, Joadpour, or Marwar, Oudiapour or Chitore, and Jeſalmire. Theſe countries are under a kind of feudal conſtitution, and every village is obliged to furniſh a certain number of horſemen at the ſhorteſt warning. The people are brave, hardy, and very much attached to their reſpective chiefs; and their army is very formidable, amounting when collected to about 150,000 horſemen.

5. The Jauts were a tribe who followed the occupation of agriculture in the northern parts of Hindoſtan. About 40 years ago they were formed into a nation by Tackou Souragemul, proprietor of an inconſiderable diſtrict. After making himſelf maſter of all the countries dependent on Agra, of the town itſelf, and many other important places he was killed in battle with Nanjib ul Dowlah, the Rohilla chief, in 1763. Since that time the power of this people has been ſo much reduced by domeſtic contentions and foreign wars, that the preſent rajah poſſeſſes only a ſtrong town named *Bartpoor*, with a ſmall diſtrict around it. The Jauts, however, it is ſaid, are now manifeſting a martial diſpoſition, and thus may poſſibly be ſoon in a condition to recover their former extent of territory.

6. The moſt conſiderable of all the Hindoo powers are the Mahrattas, with whom the Europeans firſt became acquainted in their original territories of Malabar. The firſt of their chiefs was named *Seeva*, or *Seeva jee*; who is ſaid to have been deſcended from the ancient Hindoo emperors, and whoſe father was lord of a ſmall diſtrict, for which he paid tribute to the Mohammedan king of Viziapour. For ſome reaſon unknown to us he was at laſt arreſted by order of that king, and died in confinement; but his ſon Seeva-jee took up arms in defence of his country, and made himſelf maſter of ſeveral important places, with a conſiderable tract of territory, which were afterwards ceded to him by the queen-regent, the king of Viziapour having died ſoon after the commencement of the war.

Seeva-jee having thus eſtabliſhed himſelf, became formidable to his neighbours. Many of the Hindoo princes put themſelves under his protection, and he at length ventured to make war upon the emperor Aurengzebe. In this he proved unſucceſsful, was taken priſoner, and carried to Delhi. Having found means, however, to make his eſcape, he quickly recommenced hoſtilities;

and the emperor, who, was now far advanced in life, thought proper to come to an accommodation with ſo troubleſome an enemy. On this occaſion the Mahrattas pretend that their prince obtained a grant of 10 *per cent.* on all the revenues of the Deccan; which has often ſerved as a pretence to invade that country, and levy contributions on the ſouthern nabobs. Since that time the Mahrattas have become ſo powerful, that all the princes of Hindoſtan are alarmed when they put themſelves in motion. Their territories extend about 1000 miles in length and 700 in breadth; and they are governed by a number of ſeparate chiefs, all of whom acknowledge the Ram Rajah as their ſovereign and all except Moodajee Booſlah acknowledge the Paiſhwa as his vicegerent. The capital of the ſovereign, was Sattarah; but the Paiſhwa generally reſides at Poonah, one degree to the ſouthward, and about 100 miles diſtant from Bombay. The country extends along the coaſt nearly from Goa to Cambay. On the ſouth it borders on the territories of Tippo Saib; on the eaſt it has thoſe of the Nizam and the rajah of Berar, and on the north thoſe of the Mahratta chiefs Sindia and Holkar.

7. The rajah of Berar, beſides that country, has the greateſt part of Orixa. His dominions extend about 600 miles in length from eaſt to weſt, and 250 from north to ſouth. The eaſtern part of the Orixa extends along the ſea-coaſt for about 150 Engliſh miles, and divides the Britiſh poſſeſſions in Bengal from thoſe commonly called the *Northern Circars*. On the weſt his territories border upon thoſe of the Paiſhwa; on the ſouth, upon thoſe of the Nizam, Mahomet Hyat a Patan chief, Nizam Shah, and Ajid Sing. The rajah himſelf reſides at Nagarpour, about midway betwixt Calcutta and Bombay.

8. Madajee Sindia has the greateſt part of the government of Malva, together with the province of Cardeiſh. The remainder is under the government of Holkar; who, as well as Sindia, pretends to be deſcended from the ancient kings of Malva. The principal reſidence of Sindia is at Ugein near the city of Mundu, which was once the capital of theſe kings. Holkar reſides at Indoor, a town little more than 30 miles to the weſtward of the former. The dominions of theſe, and ſome other princes of ſmaller note, extend as far as the river Jumma.

The two laſt mentioned princes, though properly Mahrattas, own no allegiance to the Ram Rajah or great chief to whom the main body are nominally ſubject. Some time ago the Mahrattas aimed at the conqueſt of all Hindoſtan, and even avowed a deſign of expelling all the Mohammedan princes; but their power was effectually checked by the Britiſh, and their diſſenſions among themſelves put an end to all ſchemes of that kind. Still, however, they were ready to watch every opportunity of invading the territories of their neighbours; and their reſources being ſo conſiderable, they were deſervedly accounted a very formidable enemy. The ſtrength of their army conſiſts chiefly in cavalry; both men and horſe are capable of enduring a great deal of fatigue. Bodies of 50 or 60,000 cavalry have been known to travel 50 miles a day for many days together; which conſidering the exceſſive heat of the country, muſt certainly appear very ſurpriſing. The country abounds very much in horſes, and there is one kind named the *Bheemerteddy* horſe which is greatly eſteemed, and ſold at a very high price. The common horſe of theſe parts is lean and looks ill, but is abundantly fit for the purpoſes of war. The only weapon uſed by the horſemen is a ſabre; in the uſe of which they are ſo dexterous, that it is ſuppoſed the beſt Eurpean huſſar would not be more than a match for a Mahratta horſeman. There are conſiderable ſtuds in every province belonging to the Paiſhwa and different chiefs, and there are likewiſe many *jundis* or great herds of horſes belonging to particular perſons, who turn thoſe they have no occaſion for looſe in the open plains.

The Mahratta horſemen are dreſſed in a quilted jacket of cotton, which is ſuppoſed to be one of the beſt defences againſt a ſword that can eaſily be contrived of equal lightneſs; but the heat of the climate frequently renders it neceſſary to be taken off. The reſt of their dreſs conſiſts of a pair of trowſers, and a kind of broad turban which deſcends low enough to cover the neck and ſhoulders. In caſes of emergency the horſemen carry proviſion both for themſelves and their horſes in a ſmall bag tied upon the ſadles; the food of the rider conſiſts only of a few ſmall cakes with a little flour or rice, and ſome ſalt and ſpices; the horſe is fed with a kind of peas named *gram*, or with balls made of the flour of theſe peas mixed with butter, prepared after a certain manner, and named *ghee*; together with ſome garlic and hot ſpices. Theſe balls are given by way of cordial, and have the property of invigorating the animal after extraordinary fatigue. Sometimes it is ſaid that they add a ſmall quantity of *bang*; a kind of drug which poſſeſſes an exhilarating virtue, and produces ſome degree of intoxication. The Mahratta cavalry ſeldom make any uſe of tents; even the officers frequently have no other accommodation than a ſmall carpet to ſit and lie on; and a ſingle camel is able to carry the whole baggage of the general. The officers, however, are generally well mounted, and have ſpare horſes in the field.

All the ſubjects and vaſſals of the Mahratta princes are generally ready to follow them into the field; and in any caſe in which the honour or intereſt of the nation appears to be concerned, they generally unite in the common cauſe. Before they invade any country, the general is at great pains to inform himſelf of the nature and ſituation of it; and they have now made incurſions into ſo many different parts of Hindoſtan, that there are but few countries there with which they are not very well acquainted. Their great ſobriety, and the fatigue they are capable of undergoing, render them very dangerous enemies. In all their expeditions the ſoldier firſt provides for his horſe, and then goes to his own meal; after which he lies down contended by the ſide of the animal, and is ready to mount him at the firſt ſound of the *nagar* or great drum. They have their horſes under the moſt excellent management; and by perpetually careſſing and converſing with them, the animals acquire a degree of docility and ſagacity unknown in other countries. When on an expedition, the horſes are accuſtomed to eat graſs pulled up by the roots, which is ſaid to be very nutritive, and to be deſtitute of that purgative quality which belongs to the blade alone. When they make an invaſion, the devaſtation is terrible; the cattle are driven off, the harveſt deſtroyed, the villages burned, and every human creature deſtroyed who comes in their way. Notwithſtanding this barbarity in time of war, however, they are very humane in time of peace, living in great harmony among themſelves, and being always ready to entertain and aſſiſt ſtrangers. Many of the cruelties they commit may be juſtly reckoned the effects of retaliation for other cruelties exerciſed upon them by their adverſaries. Thus in 1771, after having given Hyder Ally a great defeat, they cut off the ears and noſes of a whole regiment of priſoners, and in that condition ſent them back to their commander in return for his having done the ſame to a few priſoners he had taken ſome time before.

The revenue of the Paiſhwa is very conſiderable; being not leſs than ten millions ſterling; but after deducting the expence of collection, and the expence of troops kept in readineſs for the ſervice of the ſtate, it is ſuppoſed that he cannot receive more than four millions. From this again we muſt deduct the expences of the troops immediately belonging to the Paiſhwa himſelf, and which may amount to about three millions ſterling; ſo that there remains a ſurplus only of one millon after paying all the neceſſary expences of government. This nevertheleſs has been managed with ſuch economy, that though long and expenſive wars were carried on after the death of Narrain Row, the ſtate was not only clear of debt, but there was a ſurplus of two millions in the treaſury, which Ragobah diſſipated.

9. The *Deccan*, as left in 1748 by Nizam al Mulek, was by far the moſt important and extenſive ſoubadary or viceroyſhip in the empire. It then ſurpaſſed in ſize the largeſt kingdom in Europe; but ſince that time many provinces have been conquered by the Mahrattas, and the northern Circars by the Britiſh. The poſſeſſions of the Nizam are alſo diminiſhed by the ceſſion of the Carnatic to the nabob of Arcot; great part of the territories of Tippoo Saib; and many other provinces of leſs note. Still, however, the Nizam poſſeſſes very conſiderable territories; but his finances are in ſuch a wretched condition, and his provinces ſo ill governed, that he is accounted a prince of no conſequence, though otherwiſe he might be reckoned one of the moſt conſiderable powers of Hindoſtan.

10. The dominions of Tippoo Saib, the ſon and ſucceſſor to Hyder Ally, are bounded on the north by the territories of the Paiſhwa; on the ſouth by Travancore, the territory of an independent Hindoo prince; on the weſt by the ſea; and on the eaſt by a great ridge of mountains, which ſeparate them from the territories of the nabob of Arcot. The country lying to the eaſtward of theſe mountains is called the Carnatic *Payen Ghat*, and to the weſtward the Carnatic *Bhalla Ghat*. The latter belongs to Tippoo Saib; and the two together make up the country formerly named the *Carnatic*, though the name is now reſtricted to the *Payen-Ghat*. The ſituation of the Bhalla Ghat is conſiderably more elevated than the other; by which means the temperature of the air is much cooler. On the coaſt of Coromandel there is a pile of ruins called by the natives *Malavipatam*, and by the Britiſh *the ſeven pagodas*. Concerning this there is a tradition, that it once ſtood at a conſiderable diſtance from the ſea: though moſt of the ruins are now covered with water and there is likewiſe a tradition, that the mountains we ſpeak of once formed the boundary of the ocean. The revenue and ſtrength of Hyder Ally are ſaid to have been greatly exaggerated; the former amounting to no more than four millions annually, though by his economy and good management he made it anſwer every purpoſe both in time of war and peace. He was at great pains to introduce the European diſcipline among his troops; but notwithſtanding all his endeavours, he was far from being able to make them cope with the Britiſh. The advantages he gained were owing to his vaſt ſuperiority in cavalry, and the celerity of his marches; which would have been counteracted had his adverſaries been poſſeſſed of a good body of cavalry; and it is probable that the event of the war would have been decided in a ſingle campaign. His ſon Tippoo Saib is ſaid to be a man of leſs abilities than his father; though more violent in his diſpoſition. Againſt this prince hoſtilities have lately been commenced by the Britiſh in conjunction with the Mahrattas, between whom an alliance had been formed. But this event has not yet been attended with any conſequences that merit a detail.

22
Government of Hindoſtan.

With regard to the preſent government of Hindoſtan, our limits will not allow us to enter particularly upon it, nor indeed is it perhaps of any importance, as the country is divided into ſo many different kingdoms; the ſovereigns of which, however they may differ in other reſpects, ſeem all to agree in deſpotiſm and oppreſſion of their ſubjects. As a very conſiderable part is now under the dominion of Britain, it may be neceſſary to take ſome notice of the behaviour of the Britons in that part of the world, eſpecially as an idea of their exceſſive deſpotiſm and oppreſſion of the natives has of late prevailed ſo much, that the national character has ſuffered conſiderably by it. This has ariſen partly from the great pains taken to propagate it, and partly from the ignorance of thoſe among whom the report was circulated; and the exaggerated accounts and contentions of the members of the government themſelves, have contributed no leſs to confirm and heighten the prejudice of the public.

23
Defence of the Britiſh government in the eaſt.

The Britiſh territories in the Eaſt Indies were originally under the juriſdiction of a governor and 13 members; but this number has fluctuated occaſionally from 14 to 4, at which it was fixed by act of parliament. In this council all matters, whether relating to peace or war, government or commerce, were debated, the governor having no other ſuperiority than that of giving the caſting vote. In other reſpects the whole executive power was lodged in his hands, and all the correſpondence with the native princes of India was carried on by his means, the diſpatches to them being ſigned by him ſingly; and all the princes and great men who viſited the preſidency were firſt received by him, and then introduced to the counſellors. He was military governor of Fort William, and commander in chief of the preſidency; whence, as by his office he was inveſted with a conſiderable degree of power, he became an object of ſome envy and jealouſy to the members of the council and other conſiderable people in that part of the world. In conſequence of this, the government was divided into two parties, one ſiding with the governor, and the other oppoſing him; in conſequence of which, the debates were frequently carried on with ſuch heat and violence, that the records of the company are frequently ſtuffed with nothing but accounts of the conditions of theſe jarring parties. This indeed may be looked upon as one of the principal cauſes by which the reputation of the Britiſh government in the eaſtern parts of the world has ſuffered; for as there are very frequently opinions diametrically oppoſite to one another recorded upon the ſame ſubject, the contending parties in the Britiſh parliament had always ſufficient authority for what they ſaid, let them take which ſide they would; and thus the characters of all concerned in the Eaſt India government were, by one perſon or other, ſet forth in the moſt opprobrious light.

Another ſource of reproach to the Britiſh government in India, was that the court of directors in England became infected with the ſame ſpirit of party and contention which pervaded all other departments of the ſtate. Lord Clive and Mr Sullivan were the two great leaders in theſe party-diſputes; and as the intereſt of the one or the other prevailed, different perſons were appointed to the adminiſtration, and different meaſures adopted. The event of all this was, that whenever a new adminiſtration was formed, the firſt object was to condemn the meaſures of thoſe who had gone before them. Thus, in the year 1764, when Lord Clive was made governor of Bengal, the new directors repreſented the affairs of the company as in the worſt ſituation imaginable, from which they could only be extricated by the abilities of Clive. On the arrival of the latter in the eaſt, he took care to write home reports to the ſame purpoſe, and to condemn in the moſt violent manner every thing that had been done; the whole body of the company's ſervants were cenſured indiſcriminately without being allowed any means of defence, as they were in truth ignorant of the charges brought againſt them. When the affairs of the company were brought under a parliamentary review in the year 1774, the government was brought under a new regulation. It now conſiſted of a governor-general and four counſellors; three of whom were ſent from England; two being military gentlemen of high rank, and the third a gentleman employed in the war-office. On their arrival they proceeded in the ſame manner that Lord Clive had done before them: they pronounced in the moſt deciſive manner, that the company's affairs were in a ruinous ſtate; and that every ſpecies of corruption had been practiſed by the former government. This general accuſation, unſupported by any kind of evidence, was the conſtant theme of the diſpatches ſent by them to England; and thus has the reputation of the Britiſh government ſuffered exceedingly through the unwarrantable liberties which its own ſervants have been allowed to take with one another. It muſt alſo be conſidered, that from the remote ſituation of India, and the unavoidable ignorance of its affairs on that account, it was eaſy for any perſon, whoſe malicious purpoſes it might ſuit, to prejudice the public againſt the ſervants of the company to as great a degree as he pleaſed. Hence ſome perſons, ſoured by diſappointment, or envious of the ſuppoſed emoluments of others, repreſented matters in ſuch an unfair light to their correſpondents in England, that the moſt unjuſt and ſhameful charges were frequently brought againſt innocent perſons, which they could neither prevent nor defend themſelves againſt. The dreadful famine which took place in Bengal in the year 1769, offered to theſe malevolent perſons a moſt fruitful ſource of calumny; and many individuals were accuſed of having brought on this dreadful calamity, which aroſe entirely from a natural cauſe, *viz.* the failure of the rains, and which no human power could have prevented or removed.

Opinions of this kind have not only been circulated through the iſland of Britain in the moſt open manner, but have even appeared in ſome very reſpectable publications. Thus in Mr Smith's Treatiſe on the Wealth of Nations, when ſpeaking of the oppreſſion ariſing from monopolies, and comparing their effects in different ſtates: "The Engliſh company (ſays he) have not yet had time to eſtabliſh in Bengal ſo perfectly deſtructive a ſyſtem. The plan of the government, however, has had exactly the ſame tendency. It has not been uncommon, I am well aſſured, for the chief, that is, the firſt clerk of a factory, to order a peaſant to plow up a rich field of poppies, and ſow it with rice or ſome other grain. The pretence was to prevent a ſcarcity of proviſions; but the real reaſon, to give the chief an opportunity of ſelling at a better price a large quantity of opium he had on hand. Upon other occaſions the order has been reverſed, and a rich field of rice or other grain has been plowed up to make room for a plantation of poppies, when the chief ſaw that extraordinary profit was to be made by opium." To this, however, the following anſwer has appeared in a late publication, intitled A ſhort Review of the Britiſh government in India. "The poppy is a plant which requires a peculiar ſoil, and particular care in the culture of it. The medium price of the land on which it is cultivated is about 11 or 12 rupees a *begah*, or one third of an Engliſh acre. It is ſowed at the beginning of October, when the ſeaſon of the periodical rain expires. The plant begins to be fit for inciſion, in order to extract its juice, of which opium is made, about the end of December, and continues ſo till March. It requires a dry ſoil, and can be brought to maturity only in the dry ſeaſon, when the periodical rains have ceaſed. Paddy or rice lands let on a medium at three rupees a begah. Rice is ſowed about the end of May, juſt before the periodical rains commence. One crop is raiſed about the end of September; and another, which is the laſt, and by far the greateſt, about the end of December. It requires a ſoil ſaturated with water, and lies ſoaked in it for a conſiderable time. On this acount it is ſowed juſt before the periodical rains commence; and nine-tenths of the quantity of rice produced in the company's provinces grow in the kingdom of Bengal, which is ſo low and flat, that the grounds are either overflowed by the rivers Ganges and Burrampooter, with their tributary ſtreams, or ſoaked with the rain which falls and ſtagnates upon them. It is therefore evident, that the ſoil and the ſeaſon, which alone can fructify the paddy or rice; would rot and deſtroy the poppy; and it is therefore as evident, that it is utterly impoſſible, from the nature of the two plants, that the one can be plowed up to ſow the other."

With regard to the adminiſtration of the Britiſh affairs in the Eaſt Indies, it muſt be remarked, that the company now act in a very different capacity from what they originally did. From a ſociety of merchants, they are now become ſovereigns of the country to which they trade. The latter character was quite foreign to them: and they have accordingly looked upon that of merchants to be the principal one, while that of ſovereigns was to be only a kind of appendage to it. Thus, inſtead of acting for the intereſt of the country they govern, and which as ſovereigns they naturally ought to do, they have acted in many caſes directly oppoſite to it, which, as merchants, is alſo their natural intereſt. Hence alſo, when the adminiſtration in India did any thing in obedience to the orders of the directors, which orders being dictated by merchants, were prejudicial to the intereſts of the country, that injury has been ſometimes unjuſtly attributed to their ſervants, who acted merely in obedience to the orders they received. On the other hand, when the India adminiſtration acted with the generous ſpirit of ſovereigns, they were ſometimes blamed by the directors, who judged as merchants, and ſometimes by the miniſtry, who were always ready upon the ſmalleſt pretence to interfere in their affairs.

At the time when the Britiſh adminiſtration firſt commenced in Hindoſtan, the Hindoo governors were univerſally named *Rajahs*; but though many of the Hindoo families yet bear that title, it does not appear to reſemble, in any manner of way, our titles of nobility, or to be a dignity which can be conferred by any of the princes, or even by the Mogul himſelf. Hence in that part of the world there are no ancient nobility the titles being conferred merely by uſurpers, who have neither right nor title derived from any thing but violence.

In this conntry we find the title of *Zemindar*, very common; a word compounded of two others, ſignifying, in the Perſic language, a *landholder*. It appears to have been introduced by the Mohammedans, and to have been a kind of temporary office, preſcribing the performance of certain duties, and requiring ſecurity for the perſonal appearance of the Zemindar. He is obliged to attend the exchequer of the king's chief collector, at the commencement of every new year, to ſettle his revenues; and he is not allowed to enter upon the duties of his office for the year without a ſpecial order for that purpoſe. On the death of a Zemindar, the candidate for ſucceſſion muſt petition the ſovereign, engaging himſelf to perform all the ſtipulated duties, and to pay the cuſtomary fees; nor can he enter upon his office without a ſpecial inveſtiture. As the Zemindars were by virtue of their office inveſted with conſiderable power, they ſoon became not only deſpotic in their own dominions, but by degrees began to encroach on the power of the ſovereign himſelf. After the irruption of Nadir Shah every thing was thrown into confuſion; the viceroys threw off obedience to the emperor, the nabobs threw off all obedience to them, and uſurped their power; at which time it is probable that the Zemindars likewiſe aſſumed powers to which they were by no means entitled from their office. Notwithſtanding this, however, they were ſometimes treated by the Mohammedan governors as mere revenue-officers, and uſed very harſhly. At ſome times there were a ſet of people bound for the Zemindars under the title of *Woodedars*; and theſe had either a joint power with the former; or were ſuperior to them in the collection of the revenues; and ſometimes they were ſuperſeded by officers appointed immediately by government itſelf, under the various names of *Aumils*, *Tahſilders*, or *Sezawruls*.—The Zemindaries are not limited in extent or value; there being ſome in Bengal which yield a revenue as high as 350,000l. ſterling, while others ſcarcely amount to 350l.; but all the great Zemindars, and many of thoſe in middling circumſtances, having procured for themſelves the title of *Rajah*, affect much pomp and ſtate in their different diſtricts, and keep their inferiors in as great a ſubjection as the Mohammedan governors keep them. Some of them alſo have their power augmented by being of the bramin caſt; and by the reverence ſuppoſed to be due to religion on that account, joined with the power conferred upon them by the ſovereign, they are in general rendered exceedingly deſpotic, with an almoſt unlimited authority to plunder their tenants; in which they were indulged by the Nabobs from the motive of plundering them again. From the conſultations of the ſelect committee in 1769, we are informed that the Zemindars have a power of levying fines at pleaſure; that they raiſe large ſums from duties collected in the market; and that they frequently oblige the ryots or huſbandmen to work for nothing. In ſhort, the ſame claims made by the European barons on their vaſſals in the times of the feudal ſyſtem, are now made by the Zemindars on the common people of Hindoſtan. If one of them is to be married, if he has a child born, if honours are to be conferred upon him; nay, if he is even to be fined for his own miſconduct, the poor ryot muſt always contribute his ſhare. Mr Scrofton, in his hiſtory of Hindoſtan, ſets forth the ſituation of the inhabitants in the following words:—"Unhappily for the Gentoos, themſelves are made the miniſters of oppreſſion over each other; the Moor men, haughty, lazy, and voluptuous, make them, of whom they have no jealouſy, the miniſters of their oppreſſion, which further anſwers the end of dividing them, and prevents their uniting to fling off the yoke: and by the ſtrange intoxication of power, they are found ſtill more rapacious and cruel than their foreign maſters: and what is more extraordinary, the bramins ſtill exceed the reſt in every abuſe of power, and ſeem to think, if they bribe God by beſtowing a part of their plunder on cows and faquirs, their iniquities will be pardoned."

From this account of the ſituation of the people of Hindoſtan under their native rulers, it is by no means probable that they could make a worſe exchange by falling under the juriſdiction either of the Mohammedans or Europeans. A notion indeed hath been induſtriouſly propagated, that the Britiſh government has behaved with the greateſt cruelty in collecting the revenues, and that they have even invented tortures to make the rich people diſcover their treaſures; but on examining the matter impartially, the reverſe of this is found to be true. At the time that the Britiſh government interfered in the affairs of Hindoſtan, the provinces were found to be in a ruinous ſtate, in conſequence of the wars which had taken place in the country. Even in the moſt ſettled ſtate, and when the adminiſtration was moſt regular, the government was altogether deſpotic, and the mode of collecting its revenues extremely arbitrary,

bitrary; the puniſhments inflicted very cruel; and the whole ſyſtem of government ſuch as would be reckoned quite ſhocking in Europe. It is only within theſe few years that the Britiſh could effectually interpoſe in behalf of the natives; and in that ſhort time it has produced a very conſiderable reformation. It is certain, that the Britiſh government has diſcouraged oppreſſive meaſures as much as poſſible; aboliſhed the cruel modes of puniſhment uſed by the Mahommedans; and by inſtituting a more regular plan of juſtice, has procured eaſe and ſecurity to the natives, and preſerved them in a ſtate of tranquillity altogether unknown to them before its commencement. Many inſtances of the greateſt cruelty exerciſed upon the Zemindars and other collectors are to be met with in the hiſtory of Bengal, written by a native hiſtorian, and tranſlated by Gladwin: yet the perſon who exerciſed theſe cruelties was dignified with the titles of the *faithful ſervant of the Empire*, and the *Glory of the State*; which ſhows that the people were abſolutely familiariſed with cruelty, and did not know what it was to be under a lenient government. Since the Britiſh had the dominion, matters have been totally reverſed, and the Hindoos, inſtead of being treated with cruelty, perſecuted on account of their religion, and compelled to renounce it, have been uſed at leaſt with *comparative* lenity, and great indulgence has been ſhown to them even in their moſt abſurd practices and ſuperſtitions. When the Britiſh government firſt accepted the office of Dewanny, or collection of the revenues, it was not in their power to interpoſe with any kind of efficacy for the relief of the inhabitants; becauſe it was at firſt thought proper to allow the taxes to be collected by natives, who would undoubtedly follow their ancient modes of collection. Even at that time, however, the mildneſs of the Britiſh governors had ſome effect upon the Aſiatics; ſo that the people in general were treated with more lenity than formerly: and in the year 1772, when the council of Bengal openly aſſumed the office of Dewan themſelves, an immediate ſtop was put to all thoſe arbitrary and oppreſſive methods which had been formerly in uſe. Formerly ſome Zemindars had been flogged even to death, by an inſtrument called a *Korah*: but from the moment that the Britiſh council took the collection into their own hands, not only this inſtrument was laid aſide, but all kinds of corporal puniſhment; by which means the ſeverity of the Mohammedan government has been entirely aboliſhed, and no other puniſhments inflicted in caſes of inſolvency than ſuch as are in uſe in Britain. Still, however, in ſuch extenſive dominions, where a great ſhare of power muſt be one way or other committed to the natives, it is impoſſible but ſome arbitrary acts muſt be committed, as the natives are always prone to acts of deſpotiſm whenever they can commit them with impunity; but examples of this kind cannot with any degree of candour be brought as a general charge againſt the Britiſh government in India.—Mr Scrofton gives the following account of the wretched ſtate of the provinces now under the Britiſh juriſdiction at the time they were ceded to them by the Mogul. "When the governors of the provinces found the weakneſs of the Mogul, and each ſet up as ſovereign in his own province, although they could not break thro' theſe immutable laws, they invented new taxes under new names, which doubled or trebled the value of the original ones, and which the landholder was obliged to levy upon his tenants. The old ſtock of wealth for ſome time ſupported this; but when that failed, and the tenants were ſtill preſſed for more, they borrowed money of uſurers at an exorbitant intereſt; and the government ſtill continuing theſe demands, the lords of the lands were obliged to do the ſame: but as all this took place while the value of lands did not increaſe, the conſequence was, that at laſt, unable to pay the intereſt of the mortgages, the rents were ſeized by rapacious uſurers. The government finding the revenues fall ſhorter every year, at laſt ſent collectors and farmers of the revenues into the provinces. Thus the lord of the land was diveſted of power over his country, and the tenants expoſed to mercileſs plunderers; till the farmer and manufacturer, finding that the more they laboured the more they paid, the manufacturer would work no more, and the farmer would cultivate no more than was juſt ſufficient for the ſubſiſtence of his family. Thus this once flouriſhing and plentiful country has, in the courſe of a few years, been reduced to ſuch miſery, that many thouſands are continually periſhing through want. The crown lands are ſtill worſe off, let out to the higheſt bidder; and the Jagheer lands alone remain unplundered. Hence that equal diſtribution of wealth that makes the happineſs of a people, and ſpreads a face of cheerfulneſs and plenty through all ranks, has now ceaſed; and the riches of the country are ſettled partly in the hands of a few uſurers and greedy courtiers, and the reſt is carried out of the country by the foreign troops taken into pay to maintain the governors in their uſurpations. This unhappy decay the India company has already experienced in the decay of their trade, and the riſe and price of their manufactures; and will I fear, experience more and more annually."

With regard to the depoſitions of the Nabobs by the Britiſh, which has been uſed as a great argument againſt the general ſpirit of the Britiſh government in thoſe parts, it muſt be remembered, in the firſt place, that theſe Nabobs were mere uſurpers, who had not the leaſt title to their dominions, and conſequently could not, in point of right, complain more reaſonably of being deprived of their dominions than the perſons from whom they had taken them might do of their injuſtice in driving them out. Their behaviour in government alſo was ſuch, that it was impoſſible it could have ſubſiſted for any length of time without the abſolute ruin of the countries they poſſeſſed. Thus, in the caſe of Jaffier Aly Cawn, Mr Vanſittart declared the country to be in ſo confuſed and impoveriſhed a ſtate, that in all human appearance another month could not have been run through before he would have been cut off by his own Seapoys for want of pay, and the city become a ſcene of plunder and diſorder. On this account he was degraded, though without any of thoſe circumſtances of cruelty which generally characteriſe the revolutions in this part of the world. The adminiſtration was transferred to his ſon-in-law Meer Coſſim; who being an enemy to the Britiſh government altogether, a war followed, terminating in his expulſion. This was followed by the invaſion of Sujah Dowlah, and by ſcenes of horrid barbarity and devaſtation; when in 1765 Lord Clive took

Hindoſtan.

took upon him the office of Dewan, or miniſter who ſuperintends the lands and collections of the revenue. An account of his proceeding has already been given; but whatever applauſe he might gain, and in ſome reſpects deſervedly at the time, it is now ſaid, with ſome probability, that he raiſed the expectations of the people of England by far too high. The ſeeds of the ſucceeding evils were already ſown. Many ſources of wealth were dried up. Raw-ſilk, cloths, and other manufactures, had formerly been exported to Guzerat, Lahore, and even Iſpahan. This had ceaſed on the invaſion of Nadar Shah; and the influx of wealth from the European nations had ceaſed before the Britiſh government in Bengal had an exiſtence. It was computed that Coſſim Aly Cawn robbed the country of near five millions ſterling in jewels and ſpecie. China, Madras, and Bombay, were ſupplied from Bengal to the amount of more than two millions; and ſeveral other circumſtances beſides theſe contributed to diminiſh the riches and opulence of the country. In the mean time the internal adminiſtration of the country had been extremely defective. The Zemindars being under very little reſtraint, acted in a very arbitrary manner within their own diſtricts; and the tenants had no redreſs againſt the impoſitions aad exactions which were laid upon them. Meir Coſſim appointed *Aumils* to the collection of the revenues rather than Zemindars. The Aumils derive their authority directly from the perſon who has the command of the country for the preſent time, and conſequently are more eaſily called to an account than the Zemindars. At laſt, however, theſe Aumils, having obtained too great an influence in the country, Lord Clive thought proper to change the plan of collection. Three natives were now appointed, in the nabob's name, to ſuperintend this department; and one Engliſh gentleman, through whom the buſineſs was tranſacted, had his reſidence at the nabob's court, and communicated the intelligence to Calcutta. The principal acting miniſter in this plan, however, thought proper to change the mode of collection once more, and to re-appoint the Aumils; in conſequence of which the revenue became greatly diminiſhed, and they were beſides complained of as greatly oppreſſing the people. To remedy theſe evils, it was firſt propoſed by Mr Verelſt to ſend ſome of the company's ſervants into the internal parts of the country with the title of ſuperviſors; but the defects of adminiſtration were now beyond their power to remedy; the revenue was not only greatly diminiſhed, but the expence of government exceedingly augmented; and in the year 1771 the company were alarmed by accounts that bills had been drawn upon them to the amount of 1,200,000l. At this time Mr Haſtings was appointed to be governor of Bengal; and the confuſed ſtate in which matters were at the commencement of his adminiſtration will eaſily appear from the following part of a letter from the government of Bengal, dated in the month of November 1772. "Every zemindary was left to its own particular cuſtoms. The articles which compoſed the revenue, the form of keeping the accounts, the computation of time, even the technical terms, which ever form the greateſt obſcurity in every ſcience, differed as much as the ſoil and productions of the province. The nabobs exacted what they could from the zemindars and great farmers of the revenue, whom they left at liberty to plunder all below, reſerving to themſelves the liberty of plundering them in their turn, when they were ſuppoſed to have enriched themſelves with the ſpoils of the country. The mutſaddies, who ſtood between the nabob and zemindars, and between them and the people, had each their ſhares of the public wealth. Theſe profits were conſidered as illegal embezzlements, and therefore were taken with every precaution which could enſure ſecrecy; and being, conſequently, fixed by no rule, depended on the temper, abilities, or power, of each individual for the amount. It therefore became a duty to every man to take the moſt effectual meaſures to conceal the value of his property, and evade every inquiry into his conduct; while the Zemindars and other landholders, who had the advantages of long poſſeſſion, availed themſelves of it by complex diviſions of the lands, and intricate modes of collection, to perplex the officers of government, and confine the knowledge of the rents to themſelves. The internal management of each diſtrict varied no leſs than that of the whole province. The lands ſubject to the ſame collection and intermixed with each other, were ſome held by farm, ſome ſuperintended by ſhickdors or agents on the part of the collector, and were left to the Zemindars themſelves, under various degrees of control." For ſome political reaſons the company, though they had acquired the Dewanny, had not yet choſen to aſſume the executive part of the office themſelves, but committed it to the management of natives, as has already been mentioned, and their plans had been found extremely defective. By the time that Mr Haſtings had been inveſted with the government, the court of directors had reſolved to change their plan, and openly aſſume the office of the Dewanny; and the rules eſtabliſhed by that gentleman for the collection of the revenues, his mode of adminiſtering juſtice, and his police for the government of the country, are ſtill obſerved with very little variation.

The plan for collecting the revenues conſiſted, in the firſt place, in rendering the accounts as ſimple and intelligible as poſſible; in the next, in eſtabliſhing fixed rules for the collection; and in the third, making the mode of them uniform in all parts of the provinces; and in the fourth, providing for the equal adminiſtration of juſtice. The power of the Zemindars was now circumſcribed, and their extortions thoroughly put a ſtop to; many vexatious taxes and tolls were aboliſhed, and a new mode of collecting the cuſtoms was eſtabliſhed, to the great relief of the merchants: and ſo well were all the parts of this plan found to be adapted to the purpoſes they were deſigned to anſwer, that it has hitherto been made the model of all ſubſequent regulations.

One great objection to the India government is, that the Engliſh law, which undoubtedly is better calculated than any other for ſecuring the liberties of the people, has not yet been adopted in India; whence it is thought that the company's ſervants have ſtill ſhowed a diſpoſition to oppreſs rather than to relieve, the oppreſſed inhabitants of Hindoſtan. But in anſwer to this it is ſaid, that the difference betwixt the two countries is ſo great, that there can be no compariſon betwixt the one and the other, nor can the conſtitution of England be in any degree adapted to that of the other. The religion, laws, manners, and cuſtoms, of both Hindoos and Mohammedans, are ſo eſſentially different from thoſe of this country, that it is impoſſible to aſſimilate them, ſhould ever any thing of the kind be attempted. The only true method therefore of judging whether the preſent ſtate of Hindoſtan is preferable to what it formerly was, is to compare it with what it was under the beſt Mogul emperors; and in this compariſon it muſt certainly appear that the preference is greatly in favour of the Britiſh adminiſtration. In Major Rennel's work we are informed, that during the reign of Ackbar, whom he ſtyles "the glory of the houſe of Timur," the country had never enjoyed ſo much tranquillity; "but this tranquillity would hardly be deemed ſuch in any other quarter of the world, and muſt therefore be underſtood to mean a ſtate ſhort of actual rebellion, or at leaſt commotion." The ſame author, ſpeaking of the ſtate of the Britiſh empire there, uſes the following words: "The Bengal provinces, which have been in our actual poſſeſſion near 23 years, have, during that whole period, enjoyed a greater ſhare of tranquillity than any other part of India, or indeed than thoſe provinces had ever experienced ſince the days of Aurengzebe." To this we may add, that the provinces have not only experienced a perfect freedom from external invaſions, but likewiſe enjoy a degree of internal tranquillity altogether unknown before, by the ſubjection and civilization of a ſet of banditti who inhabited the hills of Rajemahl, and infeſted the travellers who paſſed that way; a wandering tribe of religious mendicants, who were wont to commit the greateſt enormities.

Another advantage the inhabitants of this country reap from the Britiſh government, is the ſecurity from violence and oppreſſion either by the Mohammedan ſuperiors or by one another. Under the article Hindoo we have already mentioned the particular circumſtance that theſe people are liable to the puniſhment of loſing their caſt from a variety of cauſes, and that this is looked upon by them to be the moſt grievous calamity they can ſuffer. The Mohammedan governors frequently took advantage of their ſuperſtition in this reſpect to oppreſs them; and this circumſtance alone frequently produced the moſt horrid confuſion. In the inſtructions given to the ſuperviſors, Mr Verelſt informs them, that "it is difficult to determine whether the original cuſtoms, or the degenerate manners of the Muſſelmen, have moſt contributed to confound the principles of right and wrong in theſe provinces. Certain it is (adds he), that almoſt every deciſion of theirs is a corrupt bargain with the higheſt bidder. Compenſation was frequently accepted of even for capital crimes, and fines became at laſt an intolerable grievance; nay, ſo venal were the judges at that time, that it became at laſt a ſettled rule to allow each of them a fourth part of any property in diſpute as a compenſation for his trouble.—It is impoſſible to ſuppoſe that ſuch monſtrous abuſes continue under the Britiſh government: on the contrary, we muſt readily believe, what the governors themſelves aſſert, that immediately after the provinces fell under Britiſh juriſdiction, both Hindoos and Mohammedans have been left to the free exerciſe of their religion, laws, and cuſtoms. The Hindoos themſelves acknowledge this, and are as well pleaſed with the mildneſs of the Britiſh government, as they are diſpleaſed with the ſuperſtition and cruelty of the Mohammedans. Under the Britiſh government we cannot ſuppoſe but that commerce, to which the inhabitants of this country are ſo much addicted, will be much more encouraged than by the avaricious and barbarous Mohammedans. The latter had impoſed ſo many reſtraints upon trade of all kinds, by the multitude of taxes collected at the landing-places, watch-houſes, markets, &c. that it was almoſt impoſſible to carry it on with any advantage Among other ſalutary regulations, however, enacted by the Britiſh government in 1772, many of thoſe taxes upon commerce were aboliſhed, and a plan laid for effectually liberating the inhabitants from thoſe ſhackles by which their commerce had been ſo long fettered.—Regard has alſo been paid to the inſtruction of the people in uſeful knowledge; and the ſeminary eſtabliſhed at Calcutta by Sir William Jones, certainly does much honour to the founder. Some regard had indeed been paid to this by the Mohammedan emperors; but at the time that the Britiſh government commenced, theſe had been entirely neglected, their endowments reſumed by government, and even the buildings fallen into ruin.

From a compariſon of any government to which the Hindoos have hitherto been ſubject, with that of Britain, indeed, it is evident that the preference muſt be given greatly in favour of the latter. At the time when the Britiſh firſt viſited that country, they were not under the juriſdiction of their native ſovereigns, nor had they been ſo for a long time before. The Moguls were not only foreigners, but a moſt cruel and deteſtable race of men; and it was by uſurpations of their own rebellious ſubjects that the anarchy and confuſion was introduced, in which the country was involved for ſo long a time. The Britiſh are foreigners as well as the Moguls; but the latter, who profeſs the intolerant ſuperſtition of Mohammed, ſuffer their conduct to be influenced by it in ſuch a manner as to treat the natives with the utmoſt cruelty. The greateſt evil perhaps which reſults from the Britiſh government is, the exportation of great ſums of money to a foreign country; but this evil, with reſpect to the provinces poſſeſſed by the Britiſh, exiſted alſo under the Mohammedan government. The Mogul emperors reſided at Delhi, which is far diſtant from the provinces of Bengal, Bahar, and Oriſſa, the territories now poſſeſſed by Britain; ſo that the greateſt part of the treaſure ſent to that capital was totally loſt to them. In the time of Aurengzebe, the emperor's tribute amounted to three millions ſterling; and of this a conſiderable part was ſpecie; but ſince that time the tribute was fixed at only 1,250,000l. and even this was a vaſt ſum; to which if we add that carried out of the country by commanders of mercenary troops who were all foreigners, it is not unreaſonable to ſuppoſe that under the Mogul government matters were ſtill worſe, even in this reſpect, than under that of Britain.

We ſhall conclude this apology for the Britiſh government, with the following extract from the treatiſe lately quoted, A ſhort Review of the Britiſh Government in India. "A more deteſtable or deteſted race of people never appeared than the Mohammedan conquerors of India; whether we conſider the brutality of their paſſions, the bigotry of their religion, the corruption of their manners, the barbarity of their education, or the tyranny of their government: in all theſe reſpects they were the terror and abhorrence of the Hindoos, whoſe country they invaded, and whoſe dominion they uſurped.

“ The fanatic ignorance of the ſavage caliph which dictated his barbarous reaſon for deſtroying the Alexandrian library, had neither been tutored nor refined by the Tartar education of Timur and his predeceſſors. The ſame ſuperſtitious bigotry which incited the Arabian caliphs to deſtroy the monuments of weſtern learning, likewiſe impelled the Tartar khans to overthrow the religious temples of the eaſtern worſhip. At the commencement of the 11th century Mahmood entered Hindoſtan, and in the courſe of 12 expeditions he deſtroyed the famous temples of Nagracut, Tannaſar, Matra, and Sumnaut. In the latter end of the next century, Mahmood Gori penetrated as far as the city of Benares, and committed outrages as Mahmood had done before at Nagracut and Sumnaut. Tamerlane poſſeſſed as much of this furious zeal as any of his ſavage predeceſſors; and if the enthuſiaſm of this deſtructive religion had not occaſionally abated among ſome of his ſucceſſors, they would ſcarce have left a Hindoo temple or prieſt in the country they ſubdued.

“ Enough, however, had been done to fix an indelible ſtain on the memory of thoſe intolerant tyrants, and to make a laſting impreſſion on the minds of the Hindoos, who, to the lateſt period of the Mogul government, were kept in conſtant dread of doctrines, which, to their apprehenſions, ſeemed to inſpire the Mohammedans with ſacrilegious cruelty. Idolatry is as great an abomination to a Muſſulman as it was to the Jews when they moſt ſtrictly revered the divine command which prohibits it; and moſt of the Hindoo ceremonies being conſidered by the Mohammedans as acts of idolatry, and all their pagodas as temples of idols, a religious principle excited mutual ſentiments of abhorrence and antipathy between the conquerors and their ſubjects. The reſt of the character of the Mohammedans may be ſummed up in the conciſe and emphatic words of Mr Scrafton, who ſays, ‘ Their diſtinguiſhing qualities are perfidy and ſenſuality.’

“ But notwithſtanding theſe facts, and that the hiſtory of their government is a diſguſting repetition of oppreſſion, maſſacres, and rebellion, the faſhion of the times has been to praiſe it, and to repreſent the ſituation of the Hindoos as eaſy and happy under it, till they were diſturbed in this peaceful ſtate of repoſe and ſecurity by the Engliſh; who have been deſcribed (with unparalleled injuſtice) as a ſet of rapacious taſkmaſters. It ſurely requires a very ſmall degree of reflection to perceive, that ſuch repreſentations of the two governments muſt, from the very nature of things, be falſe.

“ The Mohammedan conquerors came into India from a barbarous region, with minds and manners as uncultivated as the wilds from which they iſſued. The only notion they had of government was abſolute power in the ſovereign, and abſolute ſubmiſſion in the ſubject. The tenets of their religion, ſo far from ſoftening the ferocity of their nature, ſerved only to whet the edge of their perſecution towards the ſuffering Hindoos, whom they haraſſed without mercy, and deſtroyed without remorſe. The Britiſh conquerors came from a country famed for arts and ſciences; the generous principles of public liberty had been inſtilled into their minds from their earlieſt infancy; the mild tenets of Chriſtianity cheriſhed and commanded every charitable duty; and they had been taught by precept and example, to rule with equity, and to obey with freedom. Can it be ſuppoſed that, under theſe circumſtances, the two nations ſhould have totally changed characters on their coming into India? That the barbarous and ferocious Tartar ſhould become mild and enlightened; that the cultivated and generous Briton ſhould have degenerated into a cruel tyrant; and that the Britiſh governors ſhould have rendered the ſituation of their Hindoo ſubjects worſe than it was under the Mogul emperors? Reaſon revolts at the idea; and nothing but the rankeſt prejudice could either ſuggeſt or adopt it.”

With regard to the geography of this country, Mr Rennel obſerves, that though by the modern Europeans, Hindoſtan has been underſtood to mean the tract ſituated between the rivers Indus and Ganges on the eaſt and weſt, the mountains of Thibet and Tartary on the north, and the ocean on the ſouth, the extent of Hindoſtan, properly ſo called, is much more circumſcribed; and the name ought only to be applied to that part which lies to the northward of 21° or 22° latitude. The reputed ſouthern boundary of Hindoſtan is the Nerbudda river as far as it goes, and the northern frontiers of Bengal and Bahar compoſe the remainder. The countries to the ſouth of this line are called *Deccan* by the Indian geographers, and comprehend about one half of the territory generally known by the name of the *Mogul Empire*. Our author therefore chooſes to diſtinguiſh the northern part by the name of *Hindoſtan Proper;* which has indeed the Indus and mountains of Thibet and Tartary for its weſtern and northern boundaries, but the Burrampooter river is rather to be conſidered as the eaſtern boundary than the Ganges; the latter interſecting ſome of the richeſt provinces in the empire. According to this ſuppoſition, Hindoſtan Proper will equal in ſize the countries of France, Germany, Bohemia, Hungary, Switzerland, Italy, and the Low Countries; the Deccan and peninſula being about equal to the Britiſh iſlands, Spain, and Turkey in Europe.

Towards the north, Hindoſtan is very cold and barren; but towards the ſouth, very hot, and fertile in corn, rice, fruits, and other vegetables. The northern provinces are very mountainous and ſandy: while the ſouthern are for the moſt part level, and well watered with ſeveral rivers.

The moſt remarkable mountains are thoſe which ſurround it on three ſides. Thoſe on the weſt, ſeparating it from Perſia, called, in general, *Soleyman Kûy, or the mountains of Soleyman,* are of a vaſt height as well as breadth, and are only paſſable in certain places, through which roads have been made for the ſake of commerce. The chief are thoſe which lead to Kabul, Gazna, and Kandahar. This great chain of mountains is inhabited by different nations, the principal of which are the Afghans, or Patans, and the Baluches, who have extended themſelves on the ſide of India, as well as Perſia. The mountains on the north are called *Nagrakut, Hima,* or *Mûs Tâg,* which has an affinity with *Imaus,* and by other names, which are given alſo in common to the mountains on each ſide, ſeparating Hindoſtan from Thibet. The very proſpect of theſe mountains is frightful, being nothing but hideous precipices, perpetually covered with ſnow, and not to be croſſed without the greateſt danger, and difficulty.

The moſt remarkable rivers of Hindoſtan are the Indus and Ganges. The former is called by the orientals, *Send, Sind*, or *Sindi*. It riſes in the mountains to the north or north-eaſt of Hindoſtan; whence, after a long courſe, firſt to the ſouth, and then to the ſouth-weſt, it falls into the Perſian ſea, below Lower Badner, by ſeveral mouths. In its courſe it receives ſeveral other large rivers, as the Nilâh, Jamal, Behat, and Lakka.

The Ganges, called in the Indies *Ganga*, riſes in the kingdom of Thibet: entering Hindoſtan about the 30th degree of latitude, it runs firſt ſouth-eaſtward by the cities of Bekâner, Minapor, Halabas, Benares, and Patna, to Rajah Mahl, where it divides into two branches. The eaſtern having paſſed by Dâkka, the capital of Bengal, enters the gulph of that name about Chatignan. The weſtern deſcending by Koſſum Bazar and Hughly, falls into the gulph below Shandernagor, towards Pipeli.

Many of the Jews and ancient Chriſtians believed this river to be the Piſon, one of the four mentioned in ſcripture as the boundaries of the terreſtrial paradiſe. The Indians retain the greateſt reverence for its waters, going in crowds from the remoteſt parts of the country to waſh in them, from a perſuaſion that they deface from all the ſpots of ſin. The reaſon of this is, becauſe they imagine this river does not take its ſource from the boſom of the earth, but deſcends from heaven into the paradiſe of Devendre, and from thence into Hindoſtan. Nothing is more childiſh than the fables of the Bramins on this ſubject, yet the people ſwallow them all. The Mogul and prince of Golconda drink no other water than that of the Ganges: foreigners, on the contrary, pretend that it is very unwholeſome, and that it cannot be ſafely drank till it is firſt boiled. There are a great number of ſuperb pagodas on the banks of the Ganges, which are immenſely rich. At certain feſtivals, there has been ſometimes a concourſe of 100,000 people who came to bathe in it. But what principally diſtinguiſhes this river, beſides its greatneſs and rapidity, is the gold it brings down in its ſands and throws on its banks; and the precious ſtones and pearls it produces, not only in itſelf, but in the gulph of Bengal, into which it diſcharges its waters, and which abound therewith. The Chun or Jemma, the Guderaſu, the Perſilis, Lakia, and ſeveral other rivers, diſcharge themſelves into it during its courſe.

The weather and ſeaſons are, in general, very regular in this ſpacious country; the winds blowing conſtantly for ſix months from the ſouth, and ſix months from the north, with very little variation. The months of April, May, and the beginning of June, till the rains fall, are ſo extremely hot, that the reflection from the ground is apt to bliſter one's face; and but for the breeze or ſmall gale of wind which blows every day, there would be no living in that country for people bred in northern climates; for, excepting in the rainy ſeaſon, the coldeſt day is hotter there at noon than the hotteſt day in England. However, very ſurpriſing changes of heat and cold ſometimes happen within a few hours; ſo that a ſtifling hot day is ſucceeded by a night cold enough to produce a thin ice on the water, and that night by a noon as ſcorching as the preceding. Sometimes, in the dry ſeaſon, before the rains, the wind blows with ſuch extreme violence, that they carry vaſt quantities of duſt and ſand into the air, which appear black, like clouds charged with rain; but fall down in dry ſhowers, filling the eyes, ears, and noſtrils of thoſe among whom they deſcend, and penetrate every cheſt, cabinet, or cupboard, in the houſes or tents, by the key-hole or crevices.

From Surat to Agra, and beyond, it ſeldom or never rains, excepting in one ſeaſon of the year: that is, from the middle of June to the middle of September. Theſe rains generally begin and end with moſt furious ſtorms of thunder and lightning. During theſe three months it rains uſually every day, and ſometimes for a week together without intermiſſion: by this means the land is enriched, like Egypt by the Nile. Although the land looks before like the barren ſands of the Arabian deſarts; yet, in a few days after thoſe ſhowers begin to fall, the ſurface appears covered with verdure. When the rainy ſeaſon is over, the ſky becomes perfectly ſerene again, and ſcarce one cloud appears all the other nine months: however, a refreſhing dew falls every night during that dry interval, which cools the air, and cheriſhes the earth.

The produce of Hindoſtan is very rich in every kind, whether it be foſſil, vegetable, or animal. Beſides other precious ſtones found in it, there is a diamond mine at the town of Soumerpûr in Bengal. Quarries of Theban ſtone are ſo plentiful in the Mogul's empire, that there are both moſques and pagodas built entirely of it. Some travellers tell us, there are mines of lead, iron, and copper, and even ſilver; but thoſe of the laſt, if there be any, need not be opened, ſince the bullion of all nations is ſunk in this empire, which will take nothing elſe in exchange for her commodities, and prohibits the exporting it again. They till the ground with oxen and foot-ploughs, ſowing in May and the beginning of June, that all may be over before the rains, and reaping in November and December, which with them are the moſt temperate months in the year. The land is no where incloſed, excepting a little near towns and villages. The graſs is never mowed to make hay, but cut off the ground, either green or withered, as they have occaſion to uſe it. Wheat, rice, barley, and other grain, grow here in plenty, and are very good. The country abounds no leſs in fruits, as pomegranates, citrons, dates, grapes, almonds, and cocoa-nuts; plums, thoſe eſpecially called *mirabolans*; plantanes, which in ſhape reſemble a ſlender cucumber, and in taſte excel a Norwich pear; mangos, an excellent fruit, reſembling an apricot, but larger; ananas or pine apples; lemons and oranges, but not ſo good as in other countries; variety of pears and apples in the northern parts; and the tamarind-tree, the fruit of which is contained in a pod reſembling thoſe of beans. There are many other kinds of fruit-trees peculiar to the country. But the valuable trees are the cotton and mulberry, on account of the wealth they bring the natives from the manufactures of callicoes and ſilks. They plant abundance of ſugar-canes here, as well as tobacco ; but the latter is not ſo rich and ſtrong as that of America, for want of knowing how to cure and order it.

Hindoſtan affords alſo plenty of ginger, together with carrots, potatoes, onions, garlic, and other roots known to us, beſides ſmall roots and herbs for ſallads; but their flowers, though beautiful to look at, have no ſcent, excepting roſes, and ſome few other kinds.

There is a great variety animals in this country, both wild and tame ; of the former are elephants, rhinoceroſes, lions, tygers, leopards, wolves, jackals, and the like. The jackals dig up and eat dead bodies, and make a hideous noiſe in the night. The rhinoceros is not common in the Mogul's empire ; but elephants are very numerous, ſome 12, 14, or 15 feet high. There is plenty of veniſon, and game of ſeveral kinds; as red-deer, fallow-deer, elks, antelopes, kids, hares, and ſuch like. None of theſe are imparked, but all in common, and may be any body's who will be at the pains to take them. Among the wild animals alſo may be reckoned the muſk-animal, apes, and monkeys.

Hindoſtan affords variety of beaſts for carriage, as camels, dromedaries, mules, aſſes, horſes oxen, and buffaloes. Moſt of the horſes are white, and many curiouſly dappled, pied, and ſpotted all over. The fleſh of the oxen is very ſweet and tender. Being very tame, many uſe them as they do horſes to ride on. Inſtead of a bit, they put one or two ſmall ſtrings through the griſtle of the noſtrils, and faſtening the ends to a rope, uſe it inſtead of a bridle, which is held up by a bunch of griſtly fleſh which he has on the forepart of his back. They ſaddle him as they do a horſe ; and, if ſpurred a little, he will go as faſt. They are generally made uſe of all over the Indies ; and with them only are drawn waggons, coaches, and chariots. Some of theſe oxen will travel 15 leagues in a day. They are of two ſorts ; one ſix feet high, which are rare; another called *dwarfs*, which are only three. In ſome places, where the roads are ſtony, they ſhoe their oxen when they are to travel far. The buffalo's ſkin makes excellent buff, and the female yields very good milk ; but their fleſh is neither ſo palatable nor wholeſome as beef. The ſheep of Hindoſtan have large heavy tails, and their fleſh is very good, but their wool coarſe.

The country is much infeſted with reptiles and inſects; ſome of a noxious kind, as ſcorpions, ſnakes, and rats ; but the lizards, which are of a green colour, are not hurtful. Snakes and ſerpents, we are told, are ſometimes employed to diſpatch criminals, eſpecially ſuch as have been guilty of ſome atrocious crime, that kind of death being attended with the moſt grievous torture. The moſt troubleſome inſects in this hot country are flies, muſketoes, and chinches or bugs, the firſt by day, and others in the night ; when they offend no leſs by their ſtench than their bite.

HINE, or Hind, a huſbandman's ſervant. Thus the perſon who overſees the reſt, is called the maſter's hine.

HINNOM, or *the Valley of Hinnom*, (anc. geog.), a place that lay to the ſouth of Jeruſalem It was alſo called *the valley of Tophet*, and was remarkable for the cruel and barbarous worſhip of the god Molech, where parents made their children paſs through the fire in honour of that idol.

HIP, in the materia medica, the fruit of the dog-roſe or wild brier. See Rosa.—They contain a ſouriſh ſweetiſh pulp ; with a rough prickly matter incloſing the ſeeds, from which the pulp ought to be carefully ſeparated before it be taken internally: the Wirtemberg college obſerves, that from a neglect of this caution, the pulp of hips ſometimes occaſions a pruritus and uneaſineſs about the anus ; and the conſerve of it has been known to excite violent vomiting The conſerve is the only officinal preparation of this fruit. And as it is not ſuppoſed to poſſeſs any particular medical virtue, but is merely uſed to give form to other articles, the Edinburgh college have, perhaps without any material diſadvantage, entirely omitted it.

HIPPARCHUS, a great aſtronomer, born at Nice in Bithynia, flouriſhed between the 153th and 163d Olympiads. His commentary upon Aratus's phenomena is ſtill extant. Rohault was very much miſtaken when he aſſerted, that this aſtronomer was not acquainted with the particular motion of the fixed ſtars from weſt to eaſt, by which their longitude changes. By foretelling eclipſes, he taught mankind not to be frightened at them, and that even the gods were bound by laws. Pliny, who tells this, admires him for making a review of all the ſtars ; by which his deſcendants would be enabled to diſcover whether they are born and die, whether they change their place, and whether they increaſe and decreaſe.

HIPPA, in botany, a genus of the polygamia neceſſaria order, belonging to the ſyngeneſia claſs of plants. The receptacle is naked ; there is no pappus; the ſeeds are naked, with very broad margins ; the calyx is hemiſpheric, and ſubimbricated ; the radius conſiſts of ten corollulæ, obſcure, and rather cleft into three.

HIPPOBOSCA, or Horse-fly, in zoology ; a genus of inſects, belonging to the order of diptera. The beak conſiſts of two valves, is cylindrical, obtuſe, and hanging; and the feet have ſeveral claws. There are four ſpecies, diſtinguiſhed by their wings, &c. The moſt remarkable is the equina, the peſt of horſes and cows. This inſect is broad, flat, ſhining, and as it were ſcaly. Its head, thorax, and abdomen, are yellow, undulated with brown; and the legs are interſected with yellow and brown. The wings, croſſed one over the other, exceed the length of the body by above one half; they are tranſparent, tinged with a little yellow towards their outward edge, and have a ſpot near that edge of a brown colour. Theſe inſects are very difficult to be killed on account of the hard cruſtaceous ſhell which covers them; and they fix ſo cloſe and faſt to the poor animals with their claws, that they cannot rub or bite them off without wounding themſelves.

Plate CCXXXIV

HIPPOCAMPUS, in ichthyology. See Syngnathus.

HIPPOCASTANUM, or common horſe-cheſnut. See Æsculus.—It may be here added, that from ſeveral experiments in the French *Memoires d'Agriculture*, it appears that the fruit of the horſe-cheſnut affords a wholeſome nouriſhment for cattle, and may even be employed with ſucceſs for fattening them. It is ſaid to render the tallow of thoſe fattened with it particularly firm. The milk yielded by cows fed upon it, is alſo ſaid to be thicker and richer than that produced from any other kind of food.—The fruit of this tree has been likewiſe uſed as food for ſheep and poultry, and as ſoap for waſhing. It was much employed in powder as a ſternutatory by an itinerant oculiſt, and has been recommended by ſome others in certain ſtates of ophthalmia, headach, &c. in which errhines are indicated. Its effects as a ſternutatory may alſo be obtained by uſing it under the form of infuſion or decoction drawn up into the noſtrils. And it is entirely with a view to its errhine power that it is now introduced into the pharmacopœia of the Edinburgh college. But beſides this, the bark has alſo been repreſented by ſome as a cure for intermittent fevers; and it is probably with this intention that this part of the hippocaſtanum is introduced as an officinal article in the Pharmacopœia Roſſica.

HIPPOCENTAUR (formed of ιππος "horſe," κεντεω *pungo*, "I ſpur," and ταυρος "bull," in antiquity, a fabulous monſter, ſuppoſed to be half horſe and half man.

What gave occaſion to the fable was, that a people of Theſſaly, inhabiting near mount Pelion, became thus denominated, becauſe they were the firſt that taught the art of mounting on horſeback; which occaſioned ſome of their neighbours to imagine, that the horſe and man made but one animal.

The hippocentaurs ſhould ſeem to have differed from the centaurs, in this, that the latter only rode on bullocks, and the former on horſes, as the names themſelves intimate.

HIPPOCRAS, a medicinal drink, compoſed of wine, with ſpices and other ingredients infuſed therein; much uſed among the French by way of a cordial dram after meals.

There are various kinds of hippocras, according to the kind of wine and the other addditional ingredients made uſe of; as white hippocras, red hippocras, claret hippocras, ſtrawberry hippocras, hippocras without wine, cyder hippocras, &c.

That directed in the late London Diſpenſary, is to be made of cloves, ginger, cinnamon, and nutmegs, beat and infuſed in canary with ſugar; to the infuſion, milk, a lemon, and ſome ſlips of roſemary, are to be put, and the whole ſtrained through a flannel. It is recommended as a cordial, and as good in paralytic and all nervous caſes.

HIPPOCRATIA, in botany: A genus of the monogynia order, belonging to the triandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The calyx is quinquepartite; the petals five, the capſules three in number, and the latter of an obcordate ſhape.

HIPPOCRATES, the greateſt phyſician of antiquity, was born in the iſland of Cos in the 80th Olympiad, and flouriſhed at the time of the Peloponneſian war. He was the firſt that we knew of who laid down precepts concerning phyſic; and, if we may believe the author of his life, who goes under the name of *Soranus*, drew his original from Hercules and Æſculapius. He was firſt a pupil of his own father Heraclides, then of Herodicus, then of Georgias of Leontium the orator, and, according to ſome, of Democritus of Abdera. After being inſtructed in phyſic, and in the liberal arts and loſing his parents, he left his own country, and practiſed phyſic all over Greece; where he was ſo much admired for his ſkill, that he was publicly ſent for with Euryphon, a man ſuperior to him in years, to Perdiccas king of Macedonia, who was then thought to be conſumptive. But Hippocrates, as ſoon as he arrived, pronounced the diſeaſe to be entirely mental, as in truth it was. For upon the death of his father Alexander, Perdiccas fell in love with Philas his father's miſtreſs: and this Hippocrates diſcerning by the great change her preſence always brought upon him, a cure was ſoon effected.

Being intreated by the people of Abdera to come and cure Democritus of a ſuppoſed madneſs, he went; but, upon his arrival, inſtead of finding Democritus mad, he found all his fellow citizens ſo, and Democritus the only wiſe man among them. He heard many lectures, and learned much philoſophy from him; which has made Cornelius Celſus and ſome others imagine, that Hippocrates was the diſciple of Democritus, though it is probable they never ſaw each other till this interview which was occaſioned by the Abderites. Hippocrates had alſo public invitations to other countries. Thus, when a plague invaded the Illyrians and Pæonians, the kings of thoſe countries begged him to come to their relief: he did not go; but learning from the meſſengers the courſe of the winds there, he concluded that the diſtemper would come to Athens; and, foretelling what would happen, applied himſelf to take care of the city and the ſtudents. He was indeed ſuch a lover of Greece, that when his fame had reached as far as Perſia, and upon that account Artaxerxes had intreated him by his governor of the Helleſpont, with a promiſe of great rewards, to come to him, he refuſed to go. He alſo delivered his own country from a war with the Athenians, that was juſt ready to break out, by prevailing with the Theſſalians to come to their aſſiſtance, for which he received very great honours from the Coans. The Athenians alſo conferred great honours upon him: they admitted him next to Hercules in the Eleuſinian ceremonies; gave him the freedom of the city; and voted a public maintenance for him and his family in the prytanæum or council-houſe at Athens, where none were maintained at the public charge but ſuch as had done ſignal ſervice to the ſtate. He died among the Lariſſæans, ſome ſay in his 90th year, ſome in his 85th, others in his 104th, and ſome in his 109th. The beſt edition of his works is that of Foeſius, in Greek and Latin. Hippocrates wrote in the Ionian dialect. His aphoriſms, prognoſtics, and all that he has written on the ſymptoms of diſeaſes, juſtly paſs for maſter-pieces. See *Hiſtory of MEDICINE*.

HIPPOCRENE (anc. geog.), a fountain of mount Helicon, on the borders of Bœotia, ſacred to the Muſes. Some, as Ovid, make Hippocrene and Aganippe the ſame. See AGANIPPE.

HIPPOPHAGI (anc. geog.), a people of Scythia, ſo called from their living on horſe-fleſh: the fare at this day of the Tartars their deſcendants. Alſo a people of Perſia (Ptolemy).

HIPPOCREPIS, COMMON HORSE-SHOE VETCH, in botany: A genus of the decandria order, belonging to the diadelphia claſs of plants; and in the natural method ranking under the 32d order, *Papilionaceæ*. The legumen is compreſſed and crooked, with many in-

inciſions on the interior ſuture. There are three ſpecies, two natives of the warm parts of Europe, and one of Britain. They are all low herbaceous trailing plants, with yellow flowers. They are propagated by ſeeds; but having no great beauty are ſeldom kept in gardens.

HIPPODROME, Hippodromus, (compoſed of ιππος "horſe," and δρομος "courſe," of the verb δρεμω *curro*, "I run"), in antiquity, a liſt or courſe wherein chariot and horſes races were performed, and horſes exerciſed.

The Olympian hippodrome or horſe-courſe was a ſpace of ground of 600 paces long, ſurrounded with a wall, near the city Elis, and on the banks of the river Alpheus. It was uneven, and in ſome degree irregular, on account of the ſituation; in one part was a hill of a moderate height, and the circuit was adorned with temples, altars, and other embelliſhments. See Stadium. There is a very famous hippodrome at Conſtantinople, which was begun by Alexander Severus, and finiſhed by Conſtantine. This circus, called by the Turks *atmeican*, is 400 paces long, and above 100 paces wide. At the entrance of the hippodrome there is a pyramidal obeliſk of granite in one piece, about 50 feet high, terminating in a point, and charged with hieroglyphics. The Greek and Latin inſcriptions on its baſe ſhow, that it was erected by Theodoſius; the machines that were employed to raiſe it are repreſented upon it in baſſo-relievo. There are ſome veſtiges in England of the hippodromus, in which the ancient inhabitants of that country performed their races; the moſt remarkable is that near Stonehenge, which is a long tract of ground, about 350 feet, or 200 druid cubits wide, and more than a mile and three quarters, or 6000 druid cubits in length, incloſed quite round with a bank of earth, extending directly eaſt and weſt. The goal and career are at the eaſt end. The goal is a high bank of earth, raiſed with a ſlope inwards, on which the judges are ſuppoſad to have ſat. The metæ are two tumuli, or ſmall barrows, at the weſt end of the courſe. Theſe hippodromes were called in the language of the country *rhedagua*, the racer *rhedagwr*, and the carriage *rheda*, from the Britiſh word *rhedeg* "to run." One of theſe hippodromes, about half a mile to the ſouthward of Leiceſter, retains evident marks of the old name *rhedagua*, in the corrupted one of *rawdikes*. There is another of theſe, ſays Dr Stukeley, near Dorcheſter; another on the banks of the river Lowther, near Penrith in Cumberland, and another in the valley juſt without the town of Royſton.

HIPPOGLOSSUS, in ichthyology; a ſpecies of Pleuronectes.

HIPPOLYTUS, a ſon of Theſeus and Hippolyte, famous in fabulous hiſtory for his virtue and his misfortunes. His ſtepmother Phædra fell in love with him, and when he refuſed to pollute his father's bed, ſhe accuſed him to Theſeus of offering violence to her perſon. Her accuſation was readily believed, and Theſeus intreated Neptune to puniſh the incontinence of his ſon. Hippolytus fled from the reſentment of his father; and as he purſued his way along the ſea ſhores, his horſes were ſo frightened at the noiſe of ſea calves which Neptune had purpoſely ſent there, that they ran among the rocks till his chariot was broken and his body torn to pieces. Temples were raiſed to his memory, particularly at Trœzene, where he received divine honours. According to ſome accounts, Diana reſtored him to life.

HIPPOMANE, the manchineel-tree: A genus of the adelphia order, belonging to the monœcia claſs of plants; and in the natural method ranking under the 38th order, *Tricoccæ*. The male has an amentum and bifid perianthium, without any corolla; the female perianthium is trifid; there is no corolla; the ſtigma is tripartite; and the plum or capſule tricocous.

Species. 1. The mancinella, with oval ſawed leaves, is a native of all the Weſt-India Iſlands. It hath a ſmooth browniſh bark; the trunk divides upwards into many branches, garniſhed with oblong leaves about three inches long. The flowers come out in ſhort ſpikes at the end of the branches, but make no great appearance, and are ſucceeded by fruit of the ſame ſhape and ſize with a golden pippin. The tree grows to the ſize of a large oak. 2. The biglandulofa, with oblong bay leaves, is a native of South America; and grows to as large a ſize as the firſt, from which it differs moſtly in the ſhape of its leaves. 3. The ſpinoſa, with holly leaves, is a native of Campeachy, and ſeldom riſes above 20 feet high; the leaves greatly reſemble thoſe of the common holly, and are ſet with ſharp prickles at the end of each indenture. They are of a lucid green, and continue all the year.

Plate ccxxxiv.

Culture. Theſe plants being natives of very warm climates, cannot be preſerved in this country without a ſtove; nor can they by any means be made to riſe above five or ſix feet high even with that aſſiſtance. They are propagated by ſeeds; but muſt have very little moiſture, or they will certainly be killed by it.

Properties. Theſe trees have a very poiſonous quality, abounding with an acrid milky juice of a highly cauſtic nature. Strangers are often tempted to eat the fruit of the firſt ſpecies; the conſequences of which are, an inflammation of the mouth and throat, pains in the ſtomach, &c. which are very dangerous unleſs remedies are ſpeedily applied. The wood is much eſteemed for making cabinets, book-caſes, &c. being very durable, taking a fine poliſh, and not being liable to become worm eaten: but as the trees abound with a milky cauſtic juice already mentioned, fires are made round their trunks, to burn out their juice; otherwiſe thoſe who fell the trees would be in danger of loſing their ſight by the juice flying in their eyes. This juice raiſes bliſters on the ſkin wherever it falls, turns linen black; and makes it fall out in holes. It is alſo dangerous to work the wood after it is ſawn out; for if any of the ſaw-duſt happens to get into the eyes of the workmen, it cauſes inflammations and the loſs of ſight for ſome time; to prevent which, they generally cover their faces with fine lawn during the time of working the wood. It is with the juice of this tree that the Indians uſed to poiſon their arrows.

HIPPOMANES, a ſort of poiſon famous among the ancients as an ingredient in amorous philters or love-charms. The word is Greek ιππομανης, compoſed of ιππος "a horſe," and μανια "fury or madneſs."

Authors are are not agreed about the nature of the hippomanes. Pliny deſcribes it as a blackiſh caruncle found on the head of a new-born colt; which the dam bites off and eats as ſoon as ſhe is delivered. He adds, that if ſhe be prevented herein by any one's cutting it off before, ſhe will not take to nor bring up the young. Virgil, and after him Servius and Columella, deſcribe it as a poiſonous matter trickling from the pudendum of a mare when proud, or longing for the horſe. At the end of Mr. Bayle's Dictionary is a very learned diſſertation on the hippomanes, and all its virtues both real and pretended.

HIPPONAX, a Greek poet, born at Epheſus 540 years before the Chriſtian era. He cultivated the ſame ſatirical poetry as Archilochus, and was not inferior to him in the beauty or vigour of his lines. His ſatirical raillery obliged him to fly from Epheſus. As he was naturally deformed, two brothers, Buphalus and Anthermus, made a ſtatue of him; which, by the uglineſs of its features, expoſed the poet to univerſal ridicule. Hipponax reſolved to revenge the injury; and he wrote ſuch bitter invectives and ſatirical lampoons againſt them, that they hanged themſelves in deſpair. (*Cic. ad. Famil.* vii. ep. 24.)

HIPPOPHAE, SEA-BUCKTHORN: A genus of the tetrandria order, belonging to the diœcia claſs of plants; and in the natural method ranking under the 16th order, *Calycifloræ*. The male calyx is bipartite; there is no corolla; the female calyx is bifid; there is no corolla; there is one ſtyle, and a monoſpermous berry.

Species. 1. The rhamnoides hath a ſhrubby ſtem, branching irregularly eight or ten feet high, having a dark brown bark. It is armed with a few thorns; hath ſpear-ſhaped, narrow, ſeſſile leaves, of a dark green above, and hoary underneath. 2. The canadenſis hath a ſhrubby brown ſtem, branching eight or ten feet high, with oval leaves, and male and female flowers on different plants.

Culture, &c. Both theſe ſpecies are very hardy, and may be propagated in abundance by ſuckers from the roots, by layers, and by cuttings of their young ſhoots. They are retained in gardens on account of their two-coloured leaves in ſummer; and in winter, on account of the appearance of the young ſhoots, which are covered with turgid, irregular, ſcaly buds. Goats, ſheep, and horſes, eat the firſt ſpecies; cows refuſe it.

HIPPOPODES, HIPPOPEDES, or *Hippopodiæ*, compoſed of ιππος *horſe*, and πους *foot*, in the ancient geography, an appellation given to a certain people ſituated on the banks of the Scythian ſea, as being ſuppoſed to have had horſes feet. The hippopodes are mentioned by Dionyſius, Geogr. v. 310. Mela, lib. iii. cap. 6. Pliny, lib. iv. cap. 13. and St. Auguſtine, *De Civit.* lib. xvi. cap. 8. But it is conjectured, that they had this appellation given them on account of their ſwiftneſs or lightneſs of foot. Mr Pennant ſuppoſes them to have been the inhabitants of the Bothnian Gulph, and that they were the ſame ſort of people as the *Finni Lignipedes* of Olaus. They wore ſnow ſhoes; which he thinks might fairly give the idea of their being, like horſes, hoofed and ſhod.

HIPPOPOTAMUS, the RIVER-HORSE; a genus of quadrupeds belonging to the order of belluæ, the characters of which are theſe: It has four fore-teeth in the upper jaw, diſpoſed in pairs at a diſtance from each other; and four prominent fore-teeth in the under jaw, the intermediate ones being longeſt: There are two tuſks in each jaw, theſe of the under one very long and obliquely truncated; in both they ſtand ſolitary, and are recurvated: The feet are hoofed on the edges.

There is but one known ſpecies, *viz.* the amphibius, or river-horſe, (Plate CCXXXVI.) The head of this animal is of an enormous ſize, and the mouth vaſtly wide. The ears are ſmall and pointed, and lined within very thickly with ſhort fine hairs. The eyes and noſtrils are ſmall in proportion to the bulk of the animal. On the lips are ſome ſtrong hairs ſcattered in patches here and there. The hair on the body is very thin, of a whitiſh colour, and ſcarce diſcernible at firſt ſight. There is no mane on the neck, as ſome writers feign, only the hairs on that part are rather thicker. The ſkin is very thick and ſtrong, and of a duſky colour. The tail is about a foot long, taper, compreſſed, and naked. The hoofs are divided into four parts. The legs are ſhort and thick. In bulk it is ſecond only to the elephant. The length of a male has been found to be 17 feet, the circumference of the body 15, the height near 7, the legs near 3, the head above 3½, and the girth near 9. The mouth, when open, is above 2 feet wide; and furniſhed with 44 teeth of different figures (including the cutting teeth and the canine). The cutting, and particularly the canine teeth of the lower jaw, are very long, and ſo hard and ſtrong that they ſtrike fire with ſteel. This circumſtance, it is probable, gave riſe to the fable of the ancients, that the hippopotamus vomited fire from his mouth. The ſubſtance of the canine teeth is ſo white, ſo fine, and ſo hard, that it is preferable to ivory for making artificial teeth. The cutting teeth, eſpecially thoſe of the under jaw, are very long, cylindrical, and chamfered. The canine teeth are alſo long, crooked, priſmatic, and ſharp, like the tuſks of the wild boar. The grinders are ſquare or oblong, like thoſe of man, and ſo large that a ſingle tooth ſometimes weighs three pounds. The tuſks, according to Dr Sparman, are 27 inches long. —With ſuch powerful arms, and ſuch a prodigious ſtrength of body, the hippopotamus might render himſelf formidable to every other animal. But he is naturally of a mild diſpoſition, and is only formidable when provoked. His bulk is ſo great, that twelve oxen have been found neceſſary to draw one aſhore which had been ſhot in a river above the Cape; and Haſſelquiſt ſays, its hide is a load for a camel. Tho' he delights in the water, and lives in it as freely as upon land; yet he has not, like the beaver or otter, membranes between his toes. The great ſize of his belly renders his ſpecific gravity nearly equal to that of water, and makes him ſwim with eaſe.

Theſe animals inhabit the rivers of Africa, from the Niger to Berg River, many miles north of the Cape of Good Hope. They formerly abounded in the rivers nearer the Cape, but are now almoſt extirpated; and to preſerve the few which are left in Berg River, the governor has abſolutely prohibited the ſhooting them without particular permiſſion.—They are not found in any of the African rivers which run into the Mediterranean except the Nile, and even there only in Upper Egypt, and in the fens and lakes of Ethiopia which that river paſſes through. From the unwieldineſs of his body and the ſhortneſs of his legs, the hippopotamus

tamus is not able to move faſt upon land, and is then extremely timid. When purſued, he takes to the water, plunges in, ſinks to the bottom, and is ſeen walking there at full eaſe; he cannot, however, continue there long without often riſing towards the ſurface; and in the day time is ſo fearful of being diſcovered, that when he takes in freſh air the place is hardly perceptible, for he does not venture even to put his noſe out of the water. In rivers unfrequented by mankind, he is leſs cautious, and puts his whole head out of the water. If wounded, he will riſe and attack boats or canoes with great fury, and often ſink them by biting large pieces out of the ſides: and frequently people are drowned by theſe animals; for they are as bold in the water as they are timid on land. It is reported that they will at once bite a man in two.—In ſhallow rivers the hippopotamus makes deep holes in the bottom, in order to conceal his great bulk. When he quits the water, he uſually puts out half his body at once, and ſmells and looks around; but ſometimes ruſhes out with great impetuoſity, and tramples down every thing in his way.—During the night he leaves the rivers in order to paſture; when he eats ſugar-canes, ruſhes, millet, rice, &c. conſuming great quantities, and doing much damage in the cultivated fields. But as he is ſo timid on land, it is not difficult to drive him off.——The Egyptians (Mr Haſſelquiſt informs us) "have a curious manner of freeing themſelves in ſome meaſure from this deſtructive animal. They remark the places he frequents moſt, and there lay a large quantity of peaſe; when the beaſt comes on ſhore hungry and voracious, he falls to eating what is neareſt him: and filling his belly with the peaſe, they occaſion an unſupportable thirſt: he then returns immediately into the river, and drinks upon theſe dry peaſe large draughts of water, which ſuddenly cauſes his death; for the peaſe ſoon begin to ſwell with the water, and not long after the Egyptians find him dead on the ſhore, blown up, as if killed with the ſtrongeſt poiſon." The river-horſe alſo feeds on the roots of trees, which he looſens with his great teeth; but never eats fiſh, as is aſſerted by Dampier. It was reported to Mr Haſſelquiſt, that the river-horſe is an inveterate enemy to the crocodile, and kills it whenever it meets it; and that this, with ſome other reaſons, contributes much to the extirpation of the crocodile; which otherwiſe, conſidering the many eggs they would lay, would utterly deſtroy Egypt. But Mr Pennant treats the alleged enmity of the hippopotamus and crocodile as a vulgar error; an eye-witneſs, he tells us, declaring he had ſeen them ſwimming together without any diſagreement.—The hippopotami ſleep in the reedy iſlands in the midle of the ſtream, and on which they bring forth their young. A herd of females has but a ſingle male; they bring one young at a time, and that on the land, but ſuckle it in the water.—They are capable of being tamed. Belon ſays, he has ſeen one ſo gentle as to be let looſe out of a ſtable and fed by its keeper without attempting to injure any one. They are generally taken in pitfalls, and poor people eat the fleſh. In ſome parts the natives place boards full of ſharp irons in the corn-grounds; which theſe beaſts ſtrike into their feet and ſo become an eaſy prey. Sometimes they are ſtruck in the water with harpoons faſtened to cords, and 10 or 12 canoes are employed in the chace.

The hippopotamus was known to the Romans: Scaurus treated the people with the ſight of five crocodiles and one hippopotame during his ædileſhip, and exhibited them in a temporary lake. Auguſtus produced one at his triumph over Cleopatra.

This animal is the behemoth of Job; who admirably deſcribes its manners, food and haunts. "1. Behold now behemoth, which I made near thee: he eateth graſs as an ox. 2. Lo! now his ſtrength is in his loins, and his force is in the navel of his belly. 3. His bones are as ſtrong pieces of braſs; his bones are like bars of iron. 4. He lyeth under the ſhady trees, in the covert of the reed and fens. 5. Behold! he drinketh up a river: he truſteth he can draw up Jordan into his mouth." The firſt, the learned Bochart obſerves, implies the locality of its ſituation; being an inhabitant of the Nile, in the neighbourhood of Uz, the land of Job. The ſecond deſcribes its great ſtrength; and the third, the peculiar hardneſs of its bones. The fourth indicates its reſidence amidſt the vaſt reeds of the river of Egypt, and other African rivers overſhadowed with thick foreſts. The fifth, the characteriſtic wideneſs of its mouth; which is hyperbolically deſcribed as large enough to exhauſt ſuch a ſtream as Jordan.

That this article may include every ſort of information which could be collected concerning a creature ſo highly noted and of ſuch ancient fame, we ſhall add the following particulars extracted from Sparman's Voyage to the Cape of Good Hope, where theſe animals are called *ſea-cows*.

"Towards evening (Jan. 24. 1776), we came to a pit in the river, which our guides knew uſed to be frequented by ſea-cows. For this reaſon, all the different ways by which theſe animals might come up from the river, were beſet by us ſeparately; our hunting-party conſiſting in the whole of ſeven perſons, *viz.* five of us Chriſtians, together with my Hottentot and another belonging to the farmers. Beſides this, the reſt of the Hottentots were ordered to go to the windward and to the more open places; and by ſmacking their whips, and making other noiſes, to frighten and drive the animal towards us as ſoon as it ſhould make its appearance: in conſequence of which meaſures, it appeared to us, that when at length obliged to go on ſhore in queſt of its food, it muſt neceſſarily come to the hiding-place of ſome one of the hunters. Every one of theſe places were juſt at the edge of the river, between the reeds which grew on the dry parts of the river, or on thoſe ſpots which the water had left, and at the ſame time cloſe to the very narrow paths which the animal had made for itſelf at each place: in conſequence of which diſpoſition, it would inevitably paſs not above ſix inches, or a foot at moſt, from the mouth of the ſportſman's piece. Conſequently our whole dependance was upon two circumſtances; *viz.* that our guns ſhould not miſs fire, and that the ſhot ſhould not fail to prove mortal. In the former caſe, the ſportſman muſt have inevitably paid for his temerity with his life; though in the latter he had reaſon to hope, from inſtances of what had happened to others, that the fire, together with the report from the piece, as well as the ball itſelf, would confuſe the animal, ſo as to prevent it from immediately making towards its enemy. The banks of the pit which we then beſet were in moſt places ſteep and perpendicular, and the pit itſelf was almoſt three quarters of a mile long: but my poſt and that of my fellow-traveller (Mr Immelman) happened to be at the diſtance of not above 30 or 40 paces from each other. To theſe very places too, after we had waited at them an hour and an half in the moſt profound ſilence, the enormous animals did not fail to reſort. They had already, while on the other ſide of the river, got ſcent of the Hottentots; and now ſhowed by their ſwimming up and down and blowing themſelves, as well as by a ſhort but acute and piercing grunt or neighing noiſe, that they had a great ſuſpicion of theſe paſſes. I believe Mr Immelman was not leſs eager and anxious than myſelf, each of us expecting every moment to have a bout with a huge enormous beaſt which we knew had given certain proofs of its being able to bite a man aſunder. Yet were we each of us at times no leſs fearful leſt the other ſhould have the honour of killing game of ſuch conſequence. The hippopotamus, however, left us, and had made its appearance in the ſame manner where the farmers were ſtationed; notwithſtanding which, at that very inſtant we heard it ſhot at by one of the Hottentots.—The ſable darkneſs of the night, and the glittering of the Hotentot's piece, together with the loudneſs of the report from it, occaſioned by the weight of the charge, and the vibrations of the echo prolonging the ſound along the neighbouring chain of mountains, all conſpired to compoſe a moſt awful and ſuperb ſpectacle, which was ſtill heightened by the expectation of ſeeing an animal fall ſuperior in bulk to the elephant. This ſublime ſpectacle was immediately followed by a ridiculous kind of farce performed by a troop of baboons; which, from their calling and anſwering each other along a ſtraight line, we could diſcover to be encamped on a ſteep rocky mountain in the neighbourhood, with regular out-poſts in the trees on each ſide of it. After an interval of a couple of minutes, ſilence again took place, till two o'clock, when the other Hottentot fired his piece; and another alarm, though of ſhorter duration, went through the baboons out-poſts and head-quarters.

"The next morning, for the arrival of which we ardently longed, in order to ſatisfy our curioſity, our Hottentot ſportſmen related to us the following particulars concerning the adventures of the night. Involved in darkneſs, covered up to the eyes in reeds, and overſhadowed with branches of trees, they could only get a glimpſe of the animal, and conſequently could not anſwer for their ſhots having taken place: and one of them acknowledged, that he was a little confuſed, as he could not well ſee what he was about; and for the ſame reaſon fired his piece too ſoon, before the animal had well riſen out of the water. The other indeed had had an opportunity, both with the ball and ſhot that made up the charge, of wounding the animal, which went on its road, and paſſed directly by him; but he could not ſee which part of the animal preſented itſelf before the muzzle of his piece. As ſoon as he had fired, he ſlank away, and directly afterwards heard the beaſt take to the water. The reſt of the Hottentots had obſerved one of theſe animals, probably a different one from this, run up on a ſhallow along the river ſide, and thus make its eſcape, without their having been able to prevent it. After this we ſtaid here till the afternoon, in hopes that the wounded animals would die and riſe to the top of the water. But we ſtaid in vain; and to as little purpoſe would it probably have been had we waited ſtill longer, as there grew by the ſide of the river a great number of trees, to the roots of which theſe creatures, it is ſaid, in the agonies of death, make themſelves faſt by means of their long and crooked tuſks. On the other hand, ſuppoſing theſe two ſea-cows to be but ſlightly wounded, they would be cautious how they made their appearance; and indeed, in all probability, it would have been a dangerous ſervice to the ſportſman who ſhould have ventured to have followed them any farther. Beſides, the water had now, in the ſpace of a few hours, riſen conſiderably, and had overflowed many ſpots fit for lying in ambuſh; for which reaſon we departed to another hippopotamus pit leſs than this. Here too we laid, by way of ſnare, a large blunderbuſs. The Hottentots occupied one poſt; two of our company guarded another: other two (an old farmer and his ſon) ſtationed themſelves at the third, and placed me in the middle of them. Juſt in this part the banks of the river were of a conſiderable height, and the river itſelf was dried up near an extenſive ſhallow, where it was ſpread out into a little plain covered with pebble-ſtones and gravel. We three then ſet ourſelves down cloſe by the ſide of each other, in a path made by the ſea-cows, making ourſelves pretty certain, as the place was flat, and conſequently it was light here, of being able, if any hippopotamus ſhould chance to come upon the ſhallow and look about it, to ſee it plain enough to kill it with a volley of three ſhot. But to the great endangering of our lives, we on a ſudden found the animal much quicker in its motions, as well as bolder, than we had thought it; for while I was ſitting half ſleeping, and moralizing on the ſubject, ſtruck with the conſideration that we with our guns had at that preſent moment the dominion over Job's leviathan or behemoth; while, on the other hand, the flies or ſmall muſquitos had the dominion over us (ſo much, indeed, that I was obliged to wrap up my face up in a handkerchief), a ſea-cow came ruſhing upon us out of the river, with a hideous cry, as ſwift as an arrow out of a bow, at the ſame time I heard the farmer call out. "Heer Jeſus!" But fortunately at the very inſtant he diſcharged his piece, which flaſhing full in the animal's face contributed perhaps more than the ball to make it ſtart back; when ſetting up another cry, it threw itſelf into the water again with as great precipitation as it came out.

"At this I was not a little alarmed, yet, what is very ſingular, not at the danger which was real, of being trampled under foot, or being bitten aſunder by the beaſt, but in conſequence of my apprehenſions which were merely imaginary, of being drowned: for the rattling noiſe, ariſing from the creature's running out of the water and along the ſtony beech, immediately ſuggeſted to me the idea that the river had on a ſudden overflowed its banks; a ſuppoſition to which I was the more inclined, as I knew that this accident happens very frequently here. And as the hippopotamus, when it is newly come up out of the water, and is wet and ſlimy, is ſaid to gliſten in the moon-ſhine like a fiſh, it is no wonder that as ſoon as I took my handkerchief from before my eyes, it ſhould appear to me, at ſo near a view as I had of it, like a high column of water, which ſeemed to threaten to carry us off and drown us in a moment: for which reaſon I ran, or rather flew, towards the higher ground, leaving both my guns and my brother ſentinels behind me. But as juſt at this ſpot I was prevented by the ſteepneſs of the river's banks from aſcending the heights, and nevertheleſs perceived that neither my companions nor myſelf were drowned, it ran in my head, for the ſpace of ſeveral ſeconds, that we were all of us either dreaming or delirious. The farmer's ſon had fallen aſleep, and ſtill continued to ſleep very ſoundly. As to the farmer himſelf, who, panting and breathleſs, every now and then looked up to heaven, and at the ſame time, with much aukwardneſs and buſtle, was endeavouring to make his eſcape, I made all the haſte I could to diſengage him from a large wrapper, which, as well on account of his gout as by way of keeping off the flies, he had wrapped round his legs. I then aſked him what courſe the water had taken when it overflowed? and he, after a long pauſe, anſwered only by aſking me in his turn if I was not mad? upon which I was almoſt ready to put the ſame queſtion to myſelf. And even at laſt, when all this was unriddled to me I could not help doubting of the truth of it, till I found the farmer's gun was really diſcharged: for the rattling among the ſtones and the ſquaſhing in the water, occaſioned by the ſea-cow, was what I firſt heard, and what made me take to my legs; ſo that I did not attend in the leaſt either to the report of the gun or the cry of the animal, though theſe latter appeared to the reſt of our party the moſt terrible; ſo much, indeed, that they occaſioned Mr Immelman, together with the farmer's ſon-in-law, to fly from their poſt; though they had ſeen nothing of all that had happened, and could not eaſily have come to any harm.—We concluded the chace; and ſpent the remainder of the night in laughing at each other, in chattering, and forming various conjectures on the ſubject of the precipitation and impetuous fury of the ſea-cow; which, however, was probably as much alarmed and frightened as we ourſelves could poſſibly be: we even ſmoked a couple of pipes while we liſtened to the roaring of the lion, and waited for the approach of the morning. Several Hottentots then told us, that ſoon after the noiſe and tumult we have been deſcribing had ceaſed, they had ſeen a ſea-cow making its way out of the river towards that ſide of it which was unguarded.

"On the 25th, from ſome traces of the ſea-cows which we found in the duſt near another ſpot, we concluded that many of theſe huge amphibious animals had lately taken up their quarters in a certain pit thereabouts; which we accordingly prepared to lay ſiege to in every poſſible way. In the mean time, we ſaw a young lion make its eſcape into a cloſe thicket on the ſide of this ſame pit, where it might be perfectly ſafe from us and our hounds. Not much approving of this animal's being ſo near a neighbour to us, we thought it beſt for ſeveral of us markſmen to be together at each hiding-place; at the ſame time ordering our Hottentots, partly by making a noiſe and uproar, partly by the means of making large fires, to frighten the ſea-cows from attempting any of the other paſſes. Theſe animals had probably been beſet in the ſame manner ſeveral times before, as this night we ſcarcely heard any thing of them. In the mean while, however, we flattered ourſelves, that by continuing to block them up, we ſhould at leaſt by ſtarving them force them to quit their aſylum, and expoſe themſelves on the land to the fire of our guns.

"On the 26th likewiſe we were on the look-out after theſe animals, between the hours of ten and eleven in the forenoon, and alſo juſt before duſk, though upon a quite different plan from what we had before, as we meant now to hit them on their ſnouts the inſtant they ſhould ſtick them up within the reach of our guns out of the water in order to take breath, or more properly (as it is not unaptly called by the coloniſts) to blow themſelves. In order that the ſhot might prove mortal, we were obliged, however, on this occaſion, to direct it in ſuch a manner, that the ball ſhould paſs through the cavity of the noſe into the brain. It was merely upon this plan that we went out after the ſea-cows before we arrived at *Agter Bruntjes-hoogte*, and were ſtrengthened by the farmer's party. But we conſtantly found theſe animals too ſhy to allow us to put our deſigns in execution: for although, in thoſe places where they had not been frightened or wounded, they will often in the middle of the day raiſe their heads and part of their bodies above the ſurface of the water, they at this time ſcarcely ventured juſt to put one of their noſtrils only out of it, in order to breathe almoſt imperceptibly; and this only for the moſt part in thoſe ſpots in which they were ſheltered from us by the hanging branches of trees. Notwithſtanding this diſadvantageous ſituation, they, in conſequence of the acuteneſs of their ſmell, ſeemed ſtill to diſcern us, eſpecially when we were to the windward of them; as in that caſe they inſtantly withdrew to another part.

"The ſame night we betook ourſelves again to our poſts; and at half an hour after eight, it being already very dark, a ſea-cow began at intervals to put its head up above the water, and utter a ſharp, piercing, and, as it were, a very angry cry, which ſeemed to be between grunting and neighing. Perhaps this cry may be beſt expreſſed by the words *hëurkh hurkh, huh-huh*: the two firſt being uttered ſlowly, in a hoarſe but ſharp and tremulous ſound, reſembling the grunting of other animals; while the third, or compound word, is ſounded extremely quick, and is not unlike the neighing of a horſe. It is true, it is impoſſible to expreſs theſe inarticulate ſounds in writing; but perhaps one may make nearer approaches to it than one can to the gutturopalatial ſounds of the Hottentot language. At eleven o'clock came the ſame or elſe ſome other hippopotamus, and in like manner viſited the poſts we occupied. He did not, however, dare to come up, though to our extreme mortification we heard him come and nibble the boughs which hung over the ſurface of the water, as well as a little graſs and a few low ſhrubs which grew here and there on the inſide of the river's banks. We were however, in hopes that this way of living would not long ſuffice animals, one of which only required almoſt a larger portion than a whole team of oxen. Thus far at leaſt is certain, that if one ſhould calculate the conſumption of proviſions made by a ſea-cow from the ſide of its fauces, and from that of its body and of its belly, which hangs almoſt down to the ground, together with the quantity of graſs which I have at different times obſerved to have been conſumed by one of theſe animals in ſpots whither it has come over night to graze, the amount would appear almoſt incredible.

“ We paſſed the following night at the ſame poſts as we occupied on the night preceding, the ſea-cows acting much in the ſame manner as before. On the 28th, after ſun riſe, juſt as we were thinking of going from our poſts home to our waggons, there comes a female hippopotamus with her calf, from ſome other pit or river, to take up her quarters in that which we were then blockading. While ſhe was waiting at a rather ſteep part of the river's banks, and looking back after her calf, which was lame, and conſequently came on but ſlowly, ſhe received a ſhot in her ſide, upon which ſhe directly plunged into the river: but was not mortally wounded; for Flip (the farmer's ſon), the drowſieſt of all ſublunary beings, who had ſhot her, and that inſtant could hardly be awakened by two Hottentots, was ſtill half aſleep when he fired his piece. And happy was it for him that the enormous beaſt did not make towards his hiding or rather ſleeping place, and ſend him into the other world to ſleep for ever. In the mean while his ſhot was ſo far of ſervice, that one of my Hottentots ventured to ſeize the calf, and hold it faſt by its hind-legs till the reſt of the hunting party came to his aſſiſtance. Upon which the calf was faſt bound, and with the greateſt joy borne in triumph to our waggons: though while they were taking it over a ſhallow near the river, the Hottentots were very much alarmed leſt the wounded mother and the other ſea-cows ſhould be induced by the cries of the calf to come to its reſcue; the creature, as long as it was bound, making a noiſe a good deal like a hog that is going to be killed, or has got faſt between two poſts. The ſound, however, proceeding from the hippopotamus calf was more ſhrill and harſh. It ſhowed likewiſe a conſiderable ſhare of ſtrength in the attempt it made to get looſe, and was found to be quite unmanageable and unwieldy: the length of it being already three feet and a half, and the height two feet; though the Hottentots ſuppoſed it to be no more than a fortnight, or at moſt three weeks, old. When at laſt it was turned looſe, it ceaſed crying; and when the Hottentots had paſſed their hands ſeveral times over its noſe, in order to accuſtom it to their effluvia, began directly to take to them.

“ While the calf was yet alive, I made a drawing of it, a copy of which may be ſeen in the Swediſh Tranſactions for 1778. After this it was killed, diſſected, and eaten up in leſs than three hours time. The reaſon of this quick diſpatch was partly the warmth of the weather, and partly our being in abſolute want of any other freſh proviſions. We found the fleſh and fat of this calf as flabby as one might have expected from its want of age, and conſequently not near ſo good as that of the old ſea-cows; of which I found the fleſh tender, and the fat of a taſte like marrow, or at leaſt not ſo greaſy and ſtrong as other fat. It is for this reaſon likewiſe that the coloniſts look upon the fleſh and fat of the ſea cow as the wholeſomeſt meat that can be eaten: the gelatinous part of the feet in particular, when properly dreſſed, being accounted a great delicacy. The dried tongues of theſe animals are alſo conſidered even at the Cape as a rare and ſavory diſh. On my return to Sweden, I had the honour to furniſh his majeſty's table with a dried ſea-cow's tongue, two feet and eight inches long. With reſpect to form, the tongue of a full-grown hippopotamus is very blunt at the tip, and is in fact broadeſt at that part; if at the ſame time it is ſlanted off towards one ſide, and marked with lobes, as I was informed it is, this circumſtance may, perhaps, proceed from the friction it ſuffers againſt the teeth, towards the ſide on which the animal chiefly chews; at leaſt ſome traces of this oblique form were diſcoverable on the dried tongue I am ſpeaking of.

“ The hide of the adult hippopotamus bears a great reſemblance to that of the rhinoceros, but is rather thicker. Whips likewiſe made of his hide are ſtronger, and after being uſed ſome time, are more pliable than thoſe made of the hide of the rhinoceros uſually are, though they are not ſo tranſparent as theſe latter are when new.

“ The food of the hippopotamus conſiſts entirely of herbs and graſs, a circumſtance of which we are informed by Father Lobo; and which may partly be inferred from what I have already ſaid on the ſubject, as well as from the figure of the ſtomach belonging to the fœtus of a hippopotamus given in Meſſrs de Buffon and Daubenton's elegant work. I therefore do not look upon it as very probable, that theſe animals, agreeably to the aſſertions of M. de Buffon, p. 93. or of Dampier in his voyage, ſhould hunt after fiſh by way of preying upon them; eſpecially as in ſome of the rivers of the ſouthern part of Africa, where the ſea-cows are ſeen daily and in great abundance, there is not a fiſh to be ſeen; and in others only a few baſtard ſpringers, as they are called (*cyprinus gonnorynchus*), which are ſcarcely as big a common herring. It is ſaid, that a ſmall ſpecies of carp is ſtill more rarely to be met with here. It is true, that the ſea-cows ſometimes frequent the mouths of the rivers here, which are full of ſea-fiſh, and even ſometimes the ſea itſelf: we know, however, that theſe huge quadrupeds are notwithſtanding this obliged to go from thence upon dry-land in queſt of food. Neither is it probable that they can drink the ſea-water; as an inſtance was related to me of the contrary in a hippopotamus, which having been diſturbed in the rivers, had taken refuge in the ſea, and yet was obliged to go aſhore every night and drink freſh water from a well in the neighbourhood, till at laſt it was ſhot by ſome people that lay in wait for it there. That the hippopotamuſes actually lived in ſalt-water, I have ſeen evident proofs at the mouths both of *Krömme* and *Camtour* rivers, particularly in the latter, on my journey homewards; where many of theſe animals blowed themſelves in broad-day-light, and thruſt their heads up above the water; and one of them in particular, which had been wounded by an ill directed ſhot on the noſe, neighed from anger and reſentment. In Krakekamma I ſaw on the beach manifeſt traces of a hippopotamus which had come out of the ſea, but had retired thither again directly. That very attentive navigator Captain Burtz informed me, that he had frequently ſeen on the eaſtern coaſt of Africa ſea-horſes (meaning probably the hippopotamus) raiſe their heads above the ſurface of the water, in order to blow themſelves and neigh. I

Hippopotamus.

have been induced to be rather circumſtantial on this ſubject, as M. Adanſon had taken into his head, in *Voyage au Senegal*, to limit the abode of the hippopotamus to the freſh water rivers only in Africa; and M. de Buffon has taken upon him to ſupport this opinion, and to render Kolbe's teſtimony to the contrary liable to ſuſpicion.

“An old experienced huntſman told me, that he had once ſeen two hippopotamuſes copulate, which they did in the ſame manner as common cattle. On this occaſion the beaſts ſtood in a ſhallow part of the river, where the water reached up to their knees.

“The method of catching the hippopotamus conſiſts (beſides ſhooting it) in making pits for it in thoſe parts which the animal paſſes in his way to and from the river; but this method is peculiar to the Hottentots; and is only practiſed by them in the rainy ſeaſon, as the ground in ſummer is too hard for that purpoſe. It is ſaid that they have never ſucceeded in killing this huge aquatic animal with poiſoned darts, though this way of killing game is practiſed with advantage by the Hottentots for the deſtruction both of the elephant and rhinoceros. The coloniſts likewiſe were not entirely unacquainted with the method mentioned by M. Haſſelquiſt, as being common in Egypt, *viz.* to ſtrew on the ground as many peaſe or beans as the animal can poſſibly eat, by which means it burſts its belly and dies. But as this method is very expenſive, and they can generally have this animal for a ſingle charge of powder and a tin ball, ſhot in a proper direction, they chiefly and almoſt ſolely have recourſe to this cheaper expedient.

“The hippopotamus is not ſo quick in its pace on land as the generality of the larger quadrupeds, though perhaps it is not ſo ſlow and heavy as M. de Buffon deſcribes it to be; for both the Hottentots and coloniſts look upon it as dangerous to meet a hippopotamus out of the water, eſpecially as, according to report, they had had a recent inſtance of one of theſe animals, which, from certain circumſtances, was ſuppoſed to be in rutt, having for ſeveral hours purſued a Hottentot, who found it very difficult to make his eſcape. The people of this country did not entertain that opinion of the medical virtues of the hippopotamus, as they did of certain parts of the elephant and rhinoceros; excepting one coloniſt, who imagined he had found the *os petroſum* of this animal reduced to powder, and taken in the quantity that would lie on the point of a knife, excellent in convulſions, and particularly in the convulſions (*ſluypen*) of children. That the fleſh is reckoned very wholeſome food, I have already mentioned.

“Having already exceeded the limits I had preſcribed to myſelf, I do not intend to dwell here on the anatomy of the hippopotamus we caught, particularly as the internal conformation of the calves is ſomewhat different from that of the adult animal. I ſhall therefore only briefly mention the following particulars; the ſtomachs were four in number, and conſequently one more than in the fœtus examined by M. Daubenton, which was kept in ſpirits. Compare Buffon, Tom. xii. Tab. iv. fig. 2. The two firſt ſtomachs were each of them about ſeven inches long and three inches in diameter; the third was nine inches in length, and a little wider than the two former; the fourth was ſeven inches long, and at the upper part five inches broad, decreaſed by degrees on one ſide till it terminated in the *pylorus*, which had an aperture an inch in width, being about half as wide again as the *cardia*. I did not obſerve any ſuch valves as M. Daubenton has delineated. The firſt ſtomach we found moſtly empty, it containing only a few lumps of cheeſe or curd; it likewiſe differed from the reſt by the ſuperior fineneſs of its internal coat. The internal membrane of the ſecond ſtomach was rather coarſer, and had many ſmall holes in it; it likewiſe contained ſeveral clods of caſeous matter, together with a great quantity of ſand and mud. The third ſtomach had very viſible folds, both longitudinal and tranſverſal, on the inſide of it, and contained caſeous lumps of a yellow colour and harder conſiſtence than the others, together with ſeveral leaves quite whole and freſh, and at the ſame time ſome dirt. The interior membrane of the fourth ſtomach was very ſmooth, though it was not without folds; in the ſtomach itſelf there was a good deal of dirt, with a ſmall quantity of curds, which were whiter than they were in any of the other ſtomachs. This fourth ſtomach in a great meaſure covered the reſt, being ſituated on the right ſide of the animal, and was found to have the upper part of the melt adhering to its ſuperior and interior edge. This latter viſcus which was one foot long and three inches broad, diverged from it downwards on the left ſide. The inteſtinal canal was 109 feet long; the liver meaſured 14 inches from right to left, and 7 or 8 from the hind part to the fore part. On its anterior edges it had a large notch, being in other reſpects undivided and entire; it was of an oblique form, being broadeſt towards the left ſide where I diſcovered a gall-bladder five inches in length. In the uterus there was nothing particularly worthy of obſervation. I found two teats, and the heart ſurrounded with much fat; the length of this muſcle was five inches, and the breadth about four inches and a half. The communication between the auricles, called the *foramen ovale* was above an inch in diameter. Each lung was eleven inches long and undivided: but at the ſuperior and exterior part of the right lung there were two globules or proceſſes elevated half an inch above the ſurface; and on the ſide correſponding to it, in the left lung, and in the upper part of it, there was a little excreſcence, terminating in a point; ſomewhat below this, yet more forwards, there was found likewiſe a proceſs half an inch in height. Directly over the lower part of the communication formed between the right and left lung, there was a kind of creſt or comb, meaſuring an inch from the top to the baſis.

“One of my brother ſportſmen ſaid, he had once obſerved a peculiar kind of vermin on the body of one of theſe amphibious animals; but on the calf we had caught we found nothing but a ſpecies of leech, which kept only about the anus, and likewiſe a good way up in the ſtrait gut, where, by a timely abſtraction of the blood, they may be of uſe to theſe large amphibious animals; and particularly may act as preſervatives againſt the piles, repaying themſelves for their trouble in kind. Moſt of them were very ſmall; but on the other hand there was a conſiderable number of them. The only large one I ſaw of this ſpecies, being ſomewhat

what more than an inch in length, I deſcribed and made a drawing of: this is inſerted by the name of the *Hyrudo Capenſis, corpore ſuprà nigricante, medio longitunaliter ſub-brunneo, ſubtus pallidè fuſco*, in the elegant Treatiſe on Worms, which M. Adolphus Nodeer firſt ſecretary of the patriotic ſociety, is preparing for the preſs. Inſtead of the lighter coloured ſtreak upon the back, there was diſcoverable in ſome of theſe leeches one and ſometimes more longitudinal browniſh lines, which grew fainter and fainter towards the extremities.

"The huge animal of which we have been ſpeaking, has doubtleſs obtained its preſent name of hippopotamus, which ſignifies river-horſe, merely in conſequence of the neighing ſound it makes; as otherwiſe in its form it bears not the leaſt reſemblance to a horſe, but rather to a hog. Neither does it in the leaſt reſemble the ox; ſo it could be only the different ſtomachs of this animal which could occaſion it to be called *ſea-cow* at the Cape; and perhaps it is for the ſome reaſon that the Hottentots call it the *t'gao*, which nearly approaches to *t'kau*, the name by which the buffalo is known among theſe people.

"From the account given by Bellonius of a tame hippopotamus, which he deſcribes as a beaſt of a very mild and gentle nature, as well as from the diſpoſition of the calf we had juſt caught, it follows, that this animal might be eaſily brought over to Europe, where it has been formerly exhibited at two different times in the public ſpectacles at Rome. For this purpoſe the capture might eaſieſt be made at Konaps-river, where theſe animals, according to the accounts given me by the Caffres, reſide in great abundance; and milch cows might be kept ready at hand, in order to rear the calf in caſe it was a ſuckling. Indeed I am apt to ſuppoſe that one a little older than this would not be very nice in its food; as that which we caught was induced by hunger as ſoon as it was let looſe near the waggon, to put up with ſomething not extremely delicate, which had been juſt dropped from one of our oxen. This perhaps may appear very extraordinary in an animal with four ſtomachs; but there have been inſtances of this kind known in common cattle, which in Herjedal are partly fed with horſe dung. (Vid. A. A. Hulphers's Beſkrifning om Norrland *, 3:je Saml. om Herjedalen, p. 27—87.) I have been likewiſe aſſured, that this method of feeding cattle has been practiſed with great advantage in Uplandia, when there has been a ſcarcity of fodder: and that afterwards theſe ſame cattle, even when they have not been in want of proper fodder, have taken to this food of their own accord, and eaten it without any thing elſe mixed with it."

HIPPURIS, MARE'S-TAIL: A genus of the monogynia order, belonging to the monandria claſs of plants; and in the natural method ranking under the 15th order *Inundatæ*. There is no calyx, nor any petals; the ſtigma is ſimple; and there is one ſeed. There is only one ſpecies, a native of Britain, and which grows in ditches and ſtagnant waters. The flower of this plant is found at the baſe of each leaf, and is as ſimple as can be conceived; their being neither empalement nor bloſſom; and only one chive, one pointal, and one ſeed. It is a very weak aſtringent. Goats eat it; cows, ſheep, horſes, and ſwine, refuſe it.

HIRÆA, in botany; a genus of the tryginia order, belonging to the decandria claſs of plants. The calyx is pentaphyllous; the petals roundiſh and unguiculated: there are three bilibiated ſeeds.

HIRAM, a king of Tyre, contemporary with Solomon, whom he ſupplied with cedar, gold, ſilver, and other materials for building the temple. He died 1000 years B. C.

HIRAM of Tyre, an artiſt who aſſiſted in the conſtruction of Solomon's temple, and other public buildings at Jeruſalem, flouriſhed 1015 B. C.

HIRCANIA (anc. geog.) See HYRCANIA.

HIRCH-HORN, a town of Germany, in the circle of the lower Rhine, with a ſtrong caſtle. It is ſeated on the ſide of a hill on the river Neckar, and belongs to the elector Palatine. E. Long. 9. 0. N. Lat. 49. 28.

HIRE (Philip de la), an eminent French mathematician and aſtronomer, born at Paris in 1640. His father, who was painter in ordinary to the king, deſigned him for the ſame profeſſion: but he devoted himſelf to mathematical ſtudies, and was nominated together with M. Picard to make the neceſſary obſervations for a new map of France by the directions of M. Colbert. In 1683. he was employed in continuing the famous meridian line begun by M. Picard; and was next engaged in conſtructing thoſe grand aqueducts which were projected by Louis XIV. He died in 1718, after having written a great number of works, beſides ſeveral occaſional papers diſperſed in journals, and in memoirs of the Academy of Sciences.

HIRING, in law. See *BORROWING and Hiring*.

HIRPINI (anc. geog.), a people of Italy, next to the Samnites, to the ſouth eaſt, and deſcendants from them; ſituated to the north of the Picentini, and to the weſt of the Apuli, having on the north the Apennin and a part of Samnium. The name is from *Hirpus*, a term denoting a wolf in their languge; either becauſe under the conduct of this animal the colony was led and ſettled, according to Strabo; or becauſe, like that prowling animal, they lived on plunder, according to Servius.

HIRSEBURG, a town of Sileſia, in the territory of Jauer, famous for its mineral baths. It is ſeated on the river Boſar in E. Long. 17. 50. N. Lat. 50. 50.

HIRSCHFELD, a town of Germany, in the circle of the upper Rhine, and capital of a principality of the ſame name, depending on a famous abbey which was ſecularized in favour of the houſe of Caſſel. It is ſeated on the river Fulda, in E. Long. 9. 52. N. Lat. 51. 46.

HIRTELLA, in botany: A genus of the monogynia order belonging to the pentandria claſs of plants, and in the natural method ranking with thoſe of which the order is doubtful. There are five petals: the filaments are very long, perſiſting, and ſpiral; the berry is monoſpermous; the ſtyle lateral.

HIRUDO, the LEECH; a genus of inſects belonging to the order of vermes inteſtina. The body moves either forward or backward. There are ſeveral ſpecies, principally diſtinguiſhed by their colour. The moſt remarkable are the following.

1. The

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* *Hulphers's Deſcription of Norway.*

Plate CCXXXIV.

1. The medicinalis, or medicinal leech, the form of which is well known, grows to the length of two or three inches. The body is of a blackiſh brown colour, marked on the back with ſix yellow ſpots, and edged with a yellow line on each ſide; but both the ſpots and the lines grow faint, and almoſt diſappear, at ſome ſeaſons. The head is ſmaller than the tail, which fixes itſelf very firmly to any thing the creature pleaſes. It is viviparous, and produces but one young one at a time, which is in the month of July. It is an inhabitant of clear running waters, and it is well known for its uſe in bleeding. 2. The ſanguiſuga, or horſe-leech, is larger than the former: Its ſkin is ſmooth and gloſſy; the body is depreſſed; the back is duſky; and the belly is of a yellowiſh green, having a yellow lateral margin. It inhabits ſtagnant waters. 3. The geometra, or geometrical leech, grows to an inch and and a half in length; and has a ſmooth and a gloſſy ſkin of a duſky brown colour, but in ſome ſeaſons greeniſh ſpotted with white. When in motion, its back is elevated into a kind of ridge; and it then appears as if meaſuring the ſpace it paſſed over like a compaſs, whence its name. Its tail is remarkably broad; and it holds as firmly by it as by the head. It is common on ſtones in ſhallow running water; and is often found on trout and other fiſh after the ſpawning ſeaſon. 4. The muricata, or muricated leech, has a taper body, rounded at the greater extremity, and furniſhed with two ſmall tentacula or horns ſtrongly annulated and rugged upon the rings, the tail dilated. It inhabits the Atlantic Ocean, and is by the fiſhermen called the *ſea-leech*. It adheres to fiſh, and generally leaves a black mark on the ſpot.

The organs of generation in leeches are formed like thoſe of the ſea and land ſnails. See HELIX.—The leech's head is armed with a ſharp inſtrument that makes three wounds at once. They are three ſharp tubercles, ſtrong enough to cut through the ſkin of a man, or even of an ox or horſe. Their mouth is as it were the body of the pump, and their tongue or fleſhy nipple the ſucker; by the working of this piece of mechaniſm, the blood is made to riſe up to the conduit which conveys it to the animal's ſtomach, which is a membranaceous ſkin divided into 24 ſmall cells. The blood which is ſucked out is there preſerved for ſeveral months without coagulating, and proves a ſtore of proviſion to the animal. The nutritious parts, pure and already digeſted by animals, have no call to be diſengaged from heterogeneous ſubſtances; nor indeed is there an anus diſcoverable in the leech, mere tranſpiration ſeems to be all that it performs, the matter fixing on the ſurface of its body, and afterwards coming off in ſmall threads. Of this an experiment may be tried by putting a leech into oil, where it keeps alive for ſeveral days; upon being taken out and put into water, there appears to looſen from its body a kind of ſlough ſhaped like the creature's body. The organ of reſpiration, though unaſcertained, ſeems to be ſituated in the mouth; for if, like an inſect, it drew its breath through vent holes, it would not ſubſiſt in oil, as by it they would be ſtopped up.

Barbut's Genera Vermium, p. 21.

It is only the firſt ſpecies that is uſed in medicine; being applied to tender parts upon the veſſels in order to draw off the inſpiſſated blood with which they are overcharged, or to phlebotomize young children. If the leech does not faſten, a drop of milk is put on the ſpot it is wiſhed to fix on, or a little blood is drawn by means of a ſlight puncture, after which it immediately ſettles. Prudence requires it ſhould be held faſt with a piece of ruſh, leſt it ſhould find its way into the anus when uſed for the hemorrhoids, or penetrate into the œſophagus if employed to draw the gums; otherwiſe it would make the greateſt havock either in the ſtomach or inteſtines. In ſuch a caſe, the beſt remedy is to drink ſalt water, which is the method practiſed to make it loſe its hold when it ſucks longer than was intended. Oil of tartar, volatile alkali, pepper, and acids make it alſo leave the part on which it was applied. If, on the contrary, it is intended it ſhould draw a larger quantity of blood, the end of its tail is cut off. It then ſucks continually to make up the loſs it ſuſtains. The diſcharge occaſioned by the puncture of a leech is eaſily ſtopped with brandy or other ſtyptics.

At Ceylon, travellers who walk bare legged are moleſted by the great numbers of leeches concealed under the graſs.—All leeches vary in their colours at ſome ſeaſons, but they are generally of a duſky greeniſh brown or yellow, and often variegated. They are ſaid to be very reſtleſs before a change of weather, if confined in glaſſes.

HIRUNDO, in ornithology, a genus of birds of the order of paſſeres. There are 37 ſpecies, chiefly diſtinguiſhed by their colour. The moſt remarkable are,

Plate CCXXXVI.

1. The ruſtica, common or chimney-ſwallow, is diſtinguiſhed from all the other ſpecies by the ſuperior forkineſs of its tail, and by the red ſpot on the forehead and under the chin. The crown of the head, the whole upper part of the body, and the coverts of the wings are black, gloſſed with a rich purpliſh blue, moſt reſplendent in the male: the breaſt and belly white, and in the male tinged with red: the tail is black; the two middle feathers are plain, the others marked tranſverſely near their ends with a white ſpot: the exterior feathers of the tail are much longer in the male than in the female. The food of this ſwallow is the ſame with the others of its kind, viz. inſects. For the taking of theſe, in their ſwifteſt flight, nature has admirably contrived their ſeveral parts: their mouths are very wide to take in flies, &c. in their quickeſt motion; their wings are long, and adapted for diſtant and continual flight, and their tails are forked, to enable them to turn the readier in purſuit of their prey. This ſpecies is the firſt comer of all the Britiſh hirundines; and appears in general on or about the 13th of April, though now and then a ſtraggler is ſeen much earlier. This hirundo, though called *the chimney-ſwallow*, by no means builds altogether in chimneys, but often within barns and out-houſes againſt the rafters; and ſo ſhe did in Virgil's time:

> ————————*Antè*
> *Garrula quàm tignis nidos ſuſpendat hirundo.*

In Sweden ſhe builds in barns, and is called *ladu ſwala*, the barn ſwallow. Beſides in the warmer parts of Europe, there are no chimneys to houſes except they are Engliſh built: in theſe countries ſhe conſtructs her neſt in porches and gateways, and galleries, and open halls. Here and there a bird may affect ſome odd peculiar place: but in general this ſpecies breeds in chimneys; and loves to haunt thoſe ſtacks where there is a conſtant fire, no doubt, for the ſake of warmth. Not that it can ſubſiſt in the immediate ſhaft where there is a fire; but prefers one adjoining to that of the kitchen, and diſregards the perpetual ſmoke of that funnel. Five or ſix or more feet down the chimney does this little bird begin to form her neſt about the middle of May, which conſiſts, like that of the houſe-martin, of a cruſt or ſhell compoſed of dirt or mud, mixed with ſhort pieces of ſtraw to render it tough and permanent; with this difference, that whereas the ſhell of the martin is nearly hemiſpheric, that of the ſwallow is open at the top, and like half a deep diſh: this neſt is lined with fine graſſes, and feathers which are often collected as they float in the air. Wonderful is the addreſs (Mr White obſerves) which this adroit bird ſhows all day long in aſcending and deſcending with ſecurity through ſo narrow a paſs. When hovering over the mouth of the funnel, the vibrations of her wings acting on the confined air occaſion a rumbling like thunder. It is not improbable that the dam ſubmits to this inconvenient ſituation ſo low in the ſhaft, in order to ſecure her brood from rapacious birds, and particularly from owls which frequently fall down chimneys, perhaps in attempting to get at theſe neſtlings.

This bird lays from four to ſix white eggs, dotted with red ſpecks; and brings out her firſt brood about the laſt week in June, or the firſt week in July. The progreſſive method by which the young are introduced into life is very amuſing: Firſt, they emerge from the ſhaft with difficulty enough, and often fall down into the rooms below: for a day or ſo they are fed on the chimney-top, and then are conducted to the dead leafleſs bough of ſome tree, where, ſitting in a row, they are attended with great aſſiduity, and may then be called *perchers*. In a day or two more they become flyers, but are ſtill unable to take their own food: therefore they play about near the place where the dams are hawking for flies; and, when a mouthful is collected, at a certain ſignal given, the dam and the neſtling advance, riſing towards each other, and meeting at an angle; the young one all the while uttering ſuch a little quick note of gratitude and complacency, that a perſon muſt have paid very little regard to the wonders of Nature that has not often remarked this feat. The dam betakes herſelf immediately to the buſineſs of a ſecond brood as ſoon as ſhe is diſengaged from her firſt; which ſhe at once aſſociates with the firſt broods of houſe-martins; and with them congregates, cluſtering on ſunny roofs, towers and trees. This hirundo brings out her ſecond brood towards the middle and end of Auguſt. All the ſummer long is the ſwallow a moſt inſtructive pattern of unwearied induſtry and affection; for from morning to night, while there is a family to be ſupported, ſhe ſpends the whole day in ſkimming cloſe to the ground, and exerting the moſt ſudden turns and quick evolutions. Avenues, and long walks under hedges, and paſture-fields, and mown meadows where cattle graze, are her delight, eſpecially if there are trees interſperſed; becauſe in ſuch ſpots inſects moſt abound. When a fly is taken a ſmart ſnap from her bill is heard, reſembling the noiſe at the ſhutting of a watch-caſe; but the motion of the mandibles are too quick for the eye.

The ſwallow, probably the male bird, is the excubitor to houſe-martins and other little birds, announcing the approach of birds of prey. For as ſoon as an hawk appears, with a ſhrill alarming note he calls all the ſwallows and martins about him; who purſue in a body, and buffet and ſtrike their enemy till they have driven him from the village, darting down from above on his back, and riſing in a perpendicular line in perfect ſecurity. This bird alſo will ſound the alarm, and ſtrike at cats when they climb on the roofs of houſes or otherwiſe approach the neſts. Each ſpecies of hirundo drinks as it flies along, ſipping the ſurface of the water; but the ſwallow alone, in general, waſhes on the wing, by dropping into a pool for many times together: in very hot weather houſe-martins and bank-martins dip and waſh a little.—The ſwallow is a delicate ſongſter, and in ſoft ſunny weather ſings both perching and flying; on trees in a kind of concert, and on chimney-tops: it is alſo a bold flyer, ranging to diſtant towns and commons even in windy weather, which the other ſpecies ſeem much to diſlike; nay, even frequenting expoſed ſea-port towns, and making little excurſions over the ſalt water. Horſemen on wide downs are often cloſely attended by a little party of ſwallows for miles together, which plays before and behind them, ſweeping around and collecting all the ſculking inſects that are rouſed by the trampling of the horſes feet: when the wind blows hard, without this expedient, they are often forced to ſettle to pick up their lurking prey.

This ſpecies feeds much on little coleoptera, as well as on gnats and flies; and often ſettles on dug ground, or paths, for gravel to grind and digeſt its food. Mr White informs us, that before they depart, for ſome weeks, to a bird, they forſake houſes and chimneys, and rooſt in trees; and uſually withdraw about the beginning of October; though ſome few ſtragglers may be ſeen at times till the firſt week in November. Mr Pennant ſays, that for a few days previous to their departure, they aſſemble in vaſt flocks on houſe-tops, churches, and trees, from whence they take their flight (A). They are ſuppoſed to take up their winter-quarters in Senegal and parts adjacent; and ſeem to poſſeſs in turn the whole of the old continent, being known from Norway to the Cape of Good Hope on the one hand, and from Kamtſchatka to India and Japan on the other. They are alſo found in all parts of N. America, migrating north and ſouth, as in Europe. Kalm ſays, that in America they build in houſes and under the outſides of the roofs; alſo on the mountains, in ſuch parts of them as project beyond the bottom, as well as under the corners of perpendicular rocks.

2. The tahitica, or Otaheite ſwallow, is five inches in length; its body is of a brown-black colour with a ſhining

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(A) See Migration.—Concerning the annual diſappearance of theſe birds, however, naturaliſts have entertained different opinions; a detail of which, as the ſubject is curious, and would form too long a digreſſion in this place, is reſerved for a ſeparate article. See Swallow.

ſhining bluiſh gloſs, the breaſt of a fulvous purple, the abdomen of a ſooty brown ; the bill, tail, and legs are black. It inhabits the mountainous parts of Otaheite. See Fig. 1.

3. The eſculenta, or edible ſwallow, according to Buffon, is leſs than the wren, and only two inches and a quarter in length. The bill is black ; the upper parts of the body are brown, the under whitiſh ; the tail is forked, and each feather of it tipped with white : the legs are brown. See Fig. 2.

Mr Latham thinks, that the ſize as above deſcribed is by much too ſmall, as Mr Marſden ſays that the bird "appears to be the common martin ;"—"and (ſays Mr Latham) we are much inclined to think that it is at leaſt of that ſize, from the eggs which accompany the neſt now in the Britiſh muſeum, which are as big as thoſe of the martin, and of the ſame colour. However, we cannot diſpute the point." The moſt curious part of the natural hiſtory of this bird conſiſts in the neſt, which is compoſed of ſuch materials as render it not only edible, but one of the greateſt dainties of the Aſiatic epicures.

Theſe neſts (of which a particular account is given under the article *Birds-neſts*) are found in vaſt numbers in certain caverns, in various iſles in the Soolo Archipelago, ſituated between longitude 117 and 120, latitude 5 and 7 ; particularly in three ſmall iſles or rather rocks ; in the caverns of which the neſts are found fixed to the ſides in aſtoniſhing numbers. They are alſo found in amazing quantities on a ſmall iſland called *Toc*, in the ſtraits of Sunda ; the caverns of which are lined with the neſts : but nowhere in greater abundance than about Croee, near the ſouth end of Sumatra, four miles up a river of that name. But they are not peculiar to the above places : for they are likewiſe common from Java to Cochinchina on the north, and from the point of Sumatra weſt, to New Guinea on the eaſt : where the ſea is ſaid to be covered with a viſcous ſubſtance like half-melted glue, which the bird is ſuppoſed either to take up from the ſurface with its bill during flight, or to pick it from the rocks when left there by the waves.—Of theſe neſts, it is ſaid the Dutch alone export from Batavia 1000 pickles (B) every year, which are brought from the iſles of Cochinchina, and thoſe lying to the eaſt of them. It is much to be wondered, that, among other luxuries imported by us from the eaſt, the uſe of theſe neſts ſhould not have found a way to our tables ; as being yet ſo ſcarce in England as to be kept as rarities in the cabinets of collectors. The bird itſelf at Sumatra is known by the name of Layonglayong.

4. The borbonica, or wheat-ſwallow, is about the ſize of the ſwift : the plumage above is blackiſh brown ; beneath grey, marked with longitudinal brown ſpots : the tail is even at the end : the bill and legs are black. This ſpecies inhabits the Iſle of France ; frequenting places ſown with wheat, and glades of woods ; affecting elevated ſituations, and frequently ſeen perched on trees and ſtones. It follows herds of cattle for the ſake of the flies which ſurround them ; and is frequently ſeen in the wake of ſhips in great numbers, in the road near the iſle, no doubt for the ſame purpoſe. It is often obſerved of evenings about the clefts in the mountains, where it is ſaid to paſs the night ; and where it makes its neſt, which is compoſed of ſtraw and feathers. It lays two eggs, of a grey colour, dotted with brown.

5. The francica, or grey-rumped ſwallow, is in length four inches and a quarter ; having the upper parts of the body blackiſh, the rump and under parts whitiſh or grey. This ſpecies alſo inhabits the Iſle of France, but not in great numbers ; and is found chiefly in the neighbourhood of freſh waters. It flies ſwift ; and is ſeldom obſerved to perch. It is ſuppoſed to reſt in the woods at night, being ſeen about the ſkirts of them towards evening. It is generally very lean, and not good food.

6. The urbica, or martin, is inferior in ſize to the chimney-ſwallow, and its tail much leſs forked. The head and upper part of the body, except the rump, is black gloſſed with blue : the breaſt, belly, and rump, are white : the feet are covered with a ſhort white down. This is the ſecond of the ſwallow-kind that appears in England : and of its manners and economy we have the following curious account in the Rev. Mr White's Natural Hiſtory of Selborne. "They begin to appear about the 16th of April ; and for ſome time they in general pay no attention to the buſineſs of nidification ; they play and ſport about, either to recruit from the fatigue of their journey, if they do migrate at all ; or elſe that their blood may recover its true tone and texture after it has been ſo long benumbed by the ſeverities of winter. About the middle of May, if the weather be fine, the martin begins to think in earneſt of providing a manſion for its family. The cruſt or ſhell of this neſt ſeems to be formed of ſuch dirt or loam as comes moſt readily to hand, and is tempered and wrought together with little bits of broken ſtraws to render it tough and tenacious. As this bird often builds againſt a perpendicular wall without any projecting ledge under, it requires its utmoſt efforts to get the firſt foundation firmly fixed, ſo that it may ſafely carry the ſuperſtructure. On this occaſion the bird not only clings with its claws, but partly ſupports itſelf by ſtrongly inclining its tail againſt the wall, making that a fulcrum ; and thus ſteadied, it works and plaſters the materials into the face of the brick or ſtone. But then, that this work may not, while it is ſoft and green, pull itſelf down by its own weight, the provident architect has prudence and forbearance enough not to advance her work too faſt ; but by building only in the morning, and by dedicating the reſt of the day to food and amuſement, gives it ſufficient time to dry and harden. About half an inch ſeems to be a ſufficient layer for a day. Thus careful workmen, when they build mud-walls (informed at firſt perhaps by this little bird) raiſe but a moderate layer at a time, and then deſiſt ; leſt the work ſhould become top-heavy, and ſo be ruined by its own weight. By this method in about 10 or 12 days is formed an hemiſpheric neſt, with a ſmall aperture towards the top, ſtrong, compact, and warm ; and perfectly fitted for all the purpoſes for which it was intended.

(B) The pickle, or pekul, is about 125 pounds ; or, as Dampier ſays, 300 pickles are equal to 396 pounds Engliſh weight.—See Voy. vol. ii. p. 132.

ed. But then nothing is more common than for the houſe ſparrow, as ſoon as the ſhell is finiſhed, to ſeize on it as its own, to eject the owner, and to line it after its own manner. After ſo much labour is beſtowed in erecting a manſion, as nature ſeldom works in vain, martins will breed on for ſeveral years together in the ſame neſt, where it happens to be well ſheltered and ſecure from the injuries of the weather. The ſhell or cruſt of the neſt is a ſort of ruſtic-work, full of knobs and protuberances on the outſide: nor is the inſide of thoſe that I have examined ſmoothed with any exactneſs at all; but is rendered ſoft and warm, and fit for incubation, by a lining of ſmall ſtraws, graſſes, and feathers; and ſometimes by a bed of moſs interwoven with wool. In this neſt they tread or engender, frequently during the time of building; and the hen lays from three to five white eggs. At firſt, when the young are hatched, and are in a naked and helpleſs condition, the parent birds, with tender aſſiduity, carry out what comes away from their young. Was it not for this affectionate cleanlineſs, the neſtlings would ſoon be burnt up and deſtroyed in ſo deep and hollow a neſt by their own cauſtic excrement. In the quadruped creation the ſame neat precaution is made uſe of, particularly among dogs and cats, where the dams lick away what proceeds from their young. But in birds there ſeems to be a particular proviſion, that the dung of neſtlings is enveloped in a tough kind of jelly, and therefore is the eaſier conveyed off without ſoiling or daubing. Yet, as nature is cleanly in all her ways, the young perform this office for themſelves in a little time, by thruſting their tails out at the aperture of their neſt. As the young of ſmall birds preſently arrive at their ηλικια, or "full growth," they ſoon become impatient of confinement, and ſit all day with their heads out at the orifice, where the dams, by clinging to the neſt, ſupply them with food from morning to-night. For a time the young are fed on the wing by their parents; but the feat is done by ſo quick and almoſt imperceptible a flight, that a perſon muſt have attended very exactly to their motions, before he would be able to perceive it. As ſoon as the young are able to ſhift for themſelves, the dams immediately turn their thoughts to the buſineſs of a ſecond brood: while the firſt flight, ſhaken off and rejected by their nurſes, congregate in great flocks, and are the birds that are ſeen cluſtering and hovering on ſunny mornings and evenings round towers and ſteeples and on the roofs of churches and houſes. Theſe congregatings uſually begin to take place about the firſt week in Auguſt; and therefore we may conclude that by that time the firſt flight is pretty well over. The young of this ſpecies do no quit their abodes all together; but the more forward birds get abroad ſome days before the reſt. Theſe approaching the eaves of buildings, and playing about before them, make people think that ſeveral old ones attend one neſt. They are often capricious in fixing on a neſting-place, beginning many edifices, and leaving them unfiniſhed; but when once a neſt is completed in a ſheltered place, it ſerves for ſeveral ſeaſons. Thoſe which breed in a ready finiſhed houſe, get the ſtart in hatching of thoſe that build new by 10 days or a fortnight. Theſe induſtrious artificers are at their labours in the long days before four in the morning: when they fix their materials, they plaſter them on with their chins, moving their heads with a vibratory motion.—They dip and waſh as they fly ſometimes in very hot weather, but not ſo frequently as ſwallows. Martins love to frequent towns, eſpecially if there are great lakes and rivers at hand. They are by far the leaſt agile of the Britiſh hirundines: their wings and tails are ſhort, and therefore they are not capable of ſuch ſurpriſing turns, and quick and glancing evolutions as the ſwallow. Accordingly, they make uſe of a placid eaſy motion, in a middle region of the air, ſeldom mounting to any great height, and never ſweeping long together over the ſurface of the ground or water. They do not wander far for food; but affect ſheltered diſtricts, over ſome lake, or under ſome hanging wood, or in ſome hollow vale, eſpecially in windy weather. They breed the lateſt of all the ſwallow kind: in 1772 they had neſtlings on to October the 21ſt, and are never without unfledged young as late as Michaelmas.—As the ſummer declines, the congregating flocks increaſe in numbers daily, by the conſtant acceſſion of the ſecond broods; till at laſt they ſwarm in myriads upon myriads round the villages on the Thames, darkening the face of the ſky as they frequent the aits of that river, where they rooſt. They retire, the bulk of them I mean, in vaſt flocks together about the beginning of October; but have appeared of late years in a conſiderable flight in this neighbourhood, for one day or two as late as November the 3d and 6th, after they were ſuppoſed to have been gone for more than a fortnight. They therefore withdraw with us the lateſt of any ſpecies. Unleſs theſe birds are very ſhort-lived indeed, or unleſs they do not return to the diſtrict where they are bred, they muſt undergo vaſt devaſtations ſome how, and ſome where; for the birds that return yearly bear no manner of proportion to the birds that retire."

7. The rufa, or rufous-bellied ſwallow, is of the ſame ſize with the former; and has the upper parts of the body of a gloſſy black; the under rufous, growing paler towards the vent: the forehead is whitiſh; and the bill and legs are duſky. Theſe are found at Cayenne, and not unfrequently as far north as New-York. They build in houſes, without any mixture of mud; fabricating the neſt with moſs, dried plants, and ſhorts bits of ſticks, all united with a ſort of gum, ſo as ſcarce to be broken, and lined with feathers; ſuſpending it from the beams and rafters, ſides of walls, and eaves of houſes. It is ſometimes a foot and a half in length; and is fixed by one of its ſides, the opening being made near the bottom. The female lays four or five eggs; and the young go out as ſoon as their wings will ſupport them.

8. The riparia, ſand-martin, or ſhore-bird, is $4\frac{3}{4}$th inches in length, with the whole upper parts of the body of a mouſe-colour, the throat and under parts white, the bill and legs blackiſh. It is common about the banks of rivers and ſand-pits, where it terebrates a round and regular hole in the ſand or earth, which is ſerpentine and horizontal, and about two feet deep. At the inner end of this burrow does the bird depoſit, in a good degree of ſafety, her rude neſt, conſiſting of fine graſſes and feathers, uſually gooſe-feathers, very inartificially laid together. "Though at firſt (ſays Mr White) one would be diſinclined to believe that this weak bird, with her ſoft and tender bill and claws, ſhould ever be able to bore the ſtubborn

born ſand bank without entirely diſabling herſelf; yet with theſe feeble inſtruments have I ſeen a pair of them make great diſpatch; and could remark how much they had ſcooped that day by the freſh ſand which ran down the bank, and was of a different colour from that which lay looſe and bleached in the ſun. In what ſpace of time theſe little artiſts are able to mine and finiſh theſe cavities I have never been able to diſcover: but it would be a matter worthy of obſervation, where it falls in the way of any naturaliſt to make his remarks. This I have often take notice of, that ſeveral holes of different depths are left unfiniſhed at the end of ſummer. To imagine that theſe beginnings were intentionally made in order to be in the greater forwardneſs for next ſpring, is allowing perhaps too much foreſight and *rerum prudentia* to a ſimple bird. May not the cauſe of theſe *latebræ* being left unfiniſhed ariſe from their meeting in thoſe places with ſtrata too harſh, hard, and ſolid, for their purpoſe, which they relinquiſh, and go to a freſh ſpot that works more freely? Or may they not in other places fall in with a ſoil as much too looſe and mouldering, liable to flounder, and threatening to overwhelm them and their labours? One thing is remarkable—that, after ſome years, the old holes are forſaken and new ones bored; perhaps becauſe the old habitations grow foul and fetid from long uſe, or becauſe they may ſo abound with fleas as to become untenantable. This ſpecies of ſwallow moreover is ſtrangely annoyed with fleas; and we have ſeen fleas, bed-fleas (*pulex irritans*), ſwarming at the mouths of theſe holes, like bees on the ſtools of their hives.

The ſand-martin arrives much about the ſame time with the ſwallow; and lays, as ſhe does, from four to ſix white eggs. But as this ſpecies is *cryptogame*, carrying on the buſineſs of nidification, incubation, and the ſupport of its young in the dark, it would not be eaſy to aſcertain the time of breeding, were it not for the coming forth of the broods, which appear much about the time, or rather ſomewhat earlier than thoſe of the ſwallow. The neſtlings are ſupported in common, like thoſe of their congeners, with gnats and other ſmall inſects; and ſometimes they are fed with *libellulæ* (dragon flies) almoſt as long as themſelves. This hirundo is ſaid to lay only once in a year, and to produce its young more early than the reſt of its tribe: though from this laſt circumſtance it would ſeem probable that they breed at leaſt a ſecond time like the houſe-martin and ſwallow. It does not always take pains to make an hole for a neſt, frequently laying in cavities of quarries, and in hollows of trees, where it is convenient. When they happen to breed near hedges and encloſures, they are often diſpoſſeſſed of their breeding holes by the houſe-ſparrow, which is on the ſame account a fell adverſary to houſe-martins. Theſe *hirundines* are no ſongſters, but rather mute, making only a little harſh noiſe when a perſon approaches their neſts. They ſeem not to be of a ſociable turn, never with us congregating with their congeners in the autumn. They have a peculiar manner of flying; flitting about with odd jerks and vacillations, not unlike the motions of a butterfly. Doubtleſs the flight of all *hirundines* is influenced by and adapted to the peculiar ſort of inſects which furniſh their food. Hence (ſays Mr White) it would be worth enquiry to examine what particular genus of inſects affords the principal food of each reſpective ſpecies of ſwallow.

9. The montana, or crag-ſwallow, is about the ſize of the martin, and in its upper plumage like the ſand-martin: the under part of the body is rufous; the tail is ſcarcely forked; the legs are covered with grey down mixed with brown; the bill and the claws are black. Theſe birds inhabit the rocks and crags about Savoy; arriving there the middle of April, and departing the 15th of Auguſt, for the moſt part; now and then ſome ſtragglers remain to the 10th of October. This ſpecies is alſo found in the mountains of Auvergne and Dauphine; and ſpecimens have been received from Gibraltar.

10. The purpurea, or purple ſwallow, is in length ſeven inches, and the whole body is of a deep violet, very gloſſy: the quills and tail are of the ſame colour, but ſtill deeper, and the laſt forked: the legs and claws are blackiſh; and the bill is black. The colour of the female is duſky brown, with a ſlight tinge of violet. This ſpecies is found in ſummer in Carolina and Virginia; coming in May, and retiring at the approach of winter. The common people are very fond of them; and make little conveniences of boards on the outſide of their houſes for the birds to build in, like as is done for ſparrows in England; being deſirous to keep them near, as they are of much uſe in alarming the poultry of the approach of the hawk and other birds of prey; not only ſhrieking violently on the appearance of theſe enemies, but attacking them with all the efforts of the martins in Europe. See fig. 4.

11. The apus, or ſwift, is a large ſpecies, being near eight inches long, with an extent of wing near eighteen inches, though the weight of the bird is only one ounce. Their feet are ſo ſmall, that the action of walking and riſing from the ground is extremely difficult; ſo that nature has made it full amends, by furniſhing it with ample means for an eaſy and continual flight. It is more on the wing than any other ſwallow; its flight is more rapid, and that attended with a ſhrill ſcream. It reſts by clinging againſt ſome wall, or other apt body; from whence Klein ſtyles this ſpecies *hirundo muraria*. It breeds under the eaves of houſes, in ſteeples, and other lofty buildings; and makes its neſt of graſſes and feathers. The feet of this ſpecies are of a particular ſtructure, all the toes ſtanding forward: the leaſt conſiſts of only one bone; the others of an equal number, viz. two each; in which they differ from thoſe of all other birds: a conſtruction, however, nicely adapted to the purpoſes in which their feet are employed.

The ſwift is a ſummer inhabitant of Britain. It comes the lateſt, and departs the ſooneſt, of any of the tribe; not always ſtaying to the middle of Auguſt, and often not arriving before the beginning of May. A pair of theſe birds were found adhering by their claws, and in a torpid ſtate, in Feb. 1766, under the roof of Longnor-chapel, Shropſhire; on being brought to a fire, they revived, and moved about the room.

The fabulous hiſtory of the *manucodiata*, or *bird of paradiſe* (ſays Mr Pennant), is, in the hiſtory of this ſpecies, in a great meaſure verified. It was believed to have no feet; to live upon the celeſtial dew; to float perpetually on the atmoſphere; and to perform all its functions in that element. The ſwift actually performs what has been in theſe enlightened times diſproved of the former, except the ſmall time it takes in ſleeping, and what it devotes to incubation; every other action is done on the wing. The materials of its neſt it collects either as they are carried about by the winds, or picks them up from the ſurface in its ſweeping flight. Its food is undeniably the inſects that fill the air. Its drink is taken in tranſient ſips from the water's ſurface. Even its amorous rites are performed on high. Few perſons who have attended to them in a fine ſummer's morning, but muſt have ſeen them make their aerial courſes at a great height, encircling a certain ſpace with an eaſy ſteady motion. On a ſudden they fall into each others embraces, then drop precipitate with a loud ſhriek for numbers of yards. This is the critical conjuncture; and to be no more wondered at, than that inſects (a ſimilar inſtance) ſhould diſcharge the ſame duty in the ſame element.

The ſwift is a moſt alert bird, riſing very early, and retiring to rooſt very late; and is on the wing in the height of ſummer at leaſt ſixteen hours. In the longeſt days it does not withdraw to reſt till a quarter before nine in the evening, being the lateſt of all day birds. Juſt before they retire, whole groupes of them aſſemble high in the air, and ſqueak, and ſhoot about with wonderful rapidity. But this bird is never ſo much alive as in ſultry thundery weather, when it expreſſes great alacrity, and calls forth all its powers. In hot mornings, ſeveral getting together in little parties, daſh round the ſteeples and churches, ſqueaking as they go in a very clamorous manner: theſe, by nice obſervers, are ſuppoſed to be males ſerenading their ſitting hens; and not without reaſon, ſince they ſeldom ſqueak till they come cloſe to the walls or eaves, and ſince thoſe within utter at the ſame time a little inward note of complacency. When the hen has ſat hard all day, ſhe ruſhes forth juſt as it is almoſt dark, and ſtretches and relieves her weary limbs, and ſnatches a ſcanty meal for a few minutes, and then returns to her duty of incubation. Swifts, when wantonly and cruelly ſhot while they have young, diſcover a little lump of inſects in their mouths, which they pouch and hold under their tongue. In general, as already obſerved, they feed in a much higher diſtrict than the other ſpecies; they alſo range to vaſt diſtances; ſince locomotion is no labour to them, who are endowed with ſuch wonderful powers of wing. At ſome certain times in the ſummer, however, they have been obſerved hawking very low for hours together over pools and ſtreams; and upon inquiring into the object of their purſuit that induced them to deſcend ſo much below their uſual range, it has been found that they were taking *phryganeæ*, *ephemeræ*, and *libellulæ* (cadew-flies, may-flies, and dragon-flies), that were juſt emerged out of their aurelia ſtate. It appeared then no longer a wonder that they ſhould be ſo willing to ſtoop for a prey that afforded them ſuch plentiful and ſucculent nouriſhment. —Swifts ſometimes purſue and ſtrike at hawks that come in their way; but not with that vehemence and fury that ſwallows expreſs on the ſame occaſion. They are out all day long in wet days, feeding about and diſregarding ſtill rain: from whence two things may be gathered; firſt, that many inſects abide high in the air, even in rain: and next, that the feathers of theſe birds muſt be well preened to reſiſt ſo much wet. Windy weather, and particularly with heavy ſhowers, they diſlike; and on ſuch days withdraw, and are ſcarce ever ſeen.—There is a circumſtance reſpecting the *colour* of ſwifts (Mr White remarks), which ſeems not to be unworthy our attention. When they arrive in the ſpring, they are all over of a gloſſy dark ſoot-colour, except their chins, which are white; but, by being all day long in the ſun and air, they become quite weather-beaten and bleached before they depart, and yet they return gloſſy again in the ſpring. Now, if they purſue the ſun into lower latitudes, as ſome ſuppoſe, in order to enjoy a perpetual ſummer, why do they not return bleached? Do they not rather perhaps retire to reſt for a ſeaſon, and at that juncture moult and change their feathers, ſince all other birds are known to moult ſoon after the ſeaſon of breeding?

"Swifts (continues our author) are very anomalous in many particulars, diſſenting from all their congeners not only in the number of their young, but in breeding once in a ſummer; whereas all the other Britiſh hirundines breed invariably twice. It is paſt all doubt that ſwifts can breed but once, ſince they withdraw in a ſhort time after the flight of their young, and ſome time before their congeners bring out their ſecond broods. We may here remark, that, as ſwifts breed but once in a ſummer, and only two at a time, and the other hirundines twice, the latter, who lay from four to ſix eggs increaſe at an average five times as faſt as the former; But in nothing are ſwifts more ſingular than in their early retreat. They retire, as to the main body of them, by the tenth of Auguſt, and ſometimes a few days ſooner: and every ſtraggler invariably withdraws by the 20th, while their congeners, all of them, ſtay till the beginning of October; many through all that month, and ſome occaſionally to the beginning of November. This early retreat is myſterious and wonderful, ſince that time is often the ſweeteſt ſeaſon in the year. But what is more extraordinary, they begin to retire ſtill earlier in the moſt ſoutherly parts of Andaluſia, where they can be no ways influenced by any defect of heat; or, as one might ſuppoſe defect of food. Are they regulated in their motions with us by a failure of food, or by a propenſity to moulting, or by a diſpoſition to reſt after ſo rapid a life, or by what? This is one of thoſe incidents in natural hiſtory that not only baffles our reſearches, but almoſt eludes our gueſſes!"

Swifts never perch on trees or roofs, and ſo never congregate with their congeners. They are fearleſs while haunting their neſting places, and are not to be ſcared with a gun; and are often beaten down with poles and cudgels as they ſtoop to go under the eaves. Mr White informs us, that having untiled part of a roof over the neſt of a ſwift, the dam notwithſtanding ſat in the neſt: ſo ſtrongly was ſhe affected by natural στοργη for her brood, which ſhe ſuppoſed to be in danger, that, regardleſs of her own ſafety, ſhe would not ſtir, but lay ſullenly by them, permitting herſelf to be taken in hand. Swifts are much infeſted with thoſe peſts to the genus called *hippoboſcæ hirundinis*; and often wriggle and ſcratch themſelves, in their flight, to get rid of that clinging annoyance. And young ones, over-run with theſe inſects, are ſometimes found under their neſts, fallen to the ground; the number of vermin rendering their abode inſupportable.

Swifts are no ſongſters, and have only one harſh ſcreaming note; yet there are ears to which it is not diſpleaſing, from an agreeable aſſociation of ideas, ſince that note never occurs but in the moſt lovely ſummer weather. They never ſettle on the ground but through accident; neither can they walk, but only crawl; but they have a ſtrong graſp with their feet, by which they cling to walls, as already noticed. Their bodies being flat, they can enter a very narrow crevice; and where they cannot paſs on their bellies, they will turn up edgewiſe.—In London a party of ſwifts frequents the tower, playing and feeding over the river juſt below the bridge: others haunt ſome of the churches of the borough next the fields; but do not venture, like the houſe-martin, into the cloſe crowded part of the town. The Swedes have beſtowed a very pertinent name on this ſwallow, calling it *ring ſwala*, from the perpetual rings or circles that it takes round the ſcene of its nidification.—As theſe birds are apt to catch at every thing on the wing, many have taken them by a bait of a cockchafer tied to a thread, which they have ſwallowed as freely as a fiſh theirs. In the iſle of Zant, the boys are ſaid to get on an elevated place, and merely with a hook baited with a feather, have caught five or ſix dozen of them in a day. Beſides Britain, the ſwift is known to inhabit the whole of the European continent; and has alſo been noticed at the Cape of Good Hope, and Carolina in North America. Hence, moſt likely, a general inhabitant of both the old and new continent.

12. The ambroſiaca, or ambergris ſwallow, is about the ſize of a wren, with gray plumage and a very forked tail; the bill is blackiſh, and the legs are brown. It inhabits Senegal, and is ſaid to ſmell very ſtrong of ambergris.

13. The pelaſgia, or aculeated ſwallow, is ſomewhat leſs than our chimney-ſwallow: its plumage is brown, but at the throat whitiſh, and all the tail-feathers are terminated by a bare pointed ſhaft. It inhabits Carolina and Virginia in the ſummer time, and builds in chimneys. See fig. 3.

14. The melba, or white bellied ſwift, is in length 8½ inches, and weighs two ounces five drams: the bill is half an inch, ſomewhat bent, and black: the upper parts of the body are of a grey brown: the wings and tail deepeſt, with a gloſs of red and green in ſome lights: the throat, breaſt, and belly, are white; on the neck is a collar of grey brown, mixed with blackiſh: the ſides are duſky, and white mixed; lower part of the belly, and under tail-coverts, the ſame as the back: the legs are fleſh-coloured, and covered with feathers on the fore part and inſide: all the toes are placed forward, as in the ſwift. This bird inhabits the mountainous parts of Spain; building in the holes of rocks. It is found alſo on the borders of the Rhone, in Savoy, the iſle of Malta, Alps of Switzerland, and rock of Gibraltar. It comes into Savoy the beginning of April, and frequents the ponds and marſhes for 15 or 20 days; after which it retires to the mountainous parts to breed. It flies higher than the ſwift; but feeds on the ſame food, and its fleſh is accounted a delicate morſel. This ſpecies is not numerous. Scopoli ſays it builds on the ſummit of the mountains of Tyrol.

15. The cayennenſis, or white-coloured ſwallow, is about the ſize of the martin: the head and bill are black; the chin and throat white, paſſing from the laſt in a narrow collar round the neck: between the bill and eye is a ſtreak of white, which forks off into two; one paſſing a little above and the other a little way beneath the eye: the reſt of the plumage is black, with a gloſs of violet; but the greater coverts, neareſt the body, are brown, edged with white: the quills and tails are black; the laſt forked: the legs are black; and all the four toes placed before as in the ſwift; and covered with feathers to the claws.—This bird makes its neſt in the houſes at Cayenne. It is of a large ſize, in ſhape of a truncated cone; five inches one way by three the other, and nine inches in length. It is compoſed of the down of dogs-bane, well wove together; the cavity divided obliquely about the middle, lengthways, by a partition, which ſpreads itſelf over that part of the neſt where the eggs lie, which is pretty near the baſe: a ſmall parcel of the ſame ſoft down, forming a kind of plug, is placed over the top, ſerving to keep the young brood from the impreſſion of the air; from which we may ſuppoſe them to be very tender.

16. The erythrocephala, or red-headed ſwallow, has a red head, with a ſhort flat duſky bill: the back is duſky, the feathers edged with white: the under parts of the body are white, the tail coverts pale brown: the wings are both duſky; as is alſo the tail, which is a little forked. It inhabits India; and is only the ſize of a ſmall humming bird.

17. The nigra, or black ſwallow, meaſures near ſix inches in length: the colour of the bird is wholly black, and the tail is forked. It inhabits St. Domingo and Cayenne; but is not numerous. It is often ſeen to perch on dead trees; and only inhabits dry ſavannas inland. It ſcoops out a hole in the earth, half a foot in length, the mouth of it very ſmall, ſo as juſt to permit entrance: in this cavity it conſtructs the neſt and rears the young.

18. The dominicenſis, or St Domingo ſwallow, is 7 inches in length, and wholly black, with the gloſs of poliſhed ſteel, except the belly and under tail coverts, which are white: the tail is very little forked: the legs, bill, and claws are brown. It inhabits St Domingo, and other of the Weſt India iſlands, in May, June, and July; and is ſaid to imitate a lark in its ſong.

To this article we may not improperly ſubjoin the following paper (from the Gentleman's Magazine) on the utility of encouraging the breed of ſwallows, ſwifts, and martins. "The advantages that accrue to man, from the docility with which the domeſticated animals accommodate themſelves to his uſes, are obvious. But there are others, who attend on him of their own accord, whoſe beneficial exertions are little known or obſerved. Among theſe I ſhall at preſent only notice the family of ſwallows *(hirundines)*; of the four kinds of which bird found in our iſland three attach themſelves to his dwelling, as if peculiarly ſolicitous for his welfare. This connection ſeems ſo reciprocal, that where men do not inhabit, few ſwallows can find proper conveniences for their ſummer-reſidences; and as their food conſiſts wholly of inſects, the moſt diligent inquirer hath not been able to diſcover that they injure in the ſlighteſt degree the productions of the field or garden; a circumſtance nearly ſingular to theſe birds. The charge which Virgil, copying the Grecian writers, brings againſt them, of killing bees, is in this country groundleſs, and I apprehend it to be ſo in every other:

> " Abſint———
> ———Meropeſque aliæque volucres,
> Et manibus Procne pectus ſignata cruentis;
> Omnia nam late vaſtant, ipſaſque volantes
> Ore ferunt, dulcem nidis immitibus eſcam."
> *Georg. l.* 4. *v.* 23.

For the mouths of the ſwallow tribe are by no means adapted to catch ſtinging inſects with impunity. The birds who prey on bees have a long extended bill conſtructed for that purpoſe, very different from that of the ſwallow.

" By the myriads of inſects which every ſingle brood of ſwallows deſtroy in the courſe of a ſummer, they defend us in a great meaſure from the perſonal and domeſtic annoyance of flies and gnats; and what is of infinitely more conſequence, they keep down the numbers of our minute enemies, who, either in the grub or winged ſtate, would otherwiſe render the labours of the huſbandman fruitleſs. Since then ſwallows are guardians of our corn, they ſhould every where be protected by the ſame popular veneration which in Egypt defends the Ibis and the ſtork in Holland. We more frequently hear of unproductive harveſts on the continent than in this country; and it is well known that ſwallows are caught and ſold as food in the markets of Spain, France, and Italy. When this practice has been very general and ſucceſsful, I have little doubt that it hath at times contributed to the ſcarcity of corn. In England we are not driven to ſuch reſources to furniſh our tables. But what apology can be made for thoſe, and many there are, whoſe education and rank ſhould have taught them more innocent amuſements, who wantonly murder ſwallows, under the idle pretence of improving their ſkill in ſhooting game? Setting aſide the cruelty of ſtarving whole neſts of young by killing the dam; they who follow this barbarous diverſion would do well to reflect, that by every ſwallow they kill, they aſſiſt blaſts, mildews, and vermin, in cauſing a ſcarcity of bread. Every lord of a manor ſhould reſtrain his game-keeper from this execrable practice; nor ſhould he permit any perſon to ſport on his lands who does not refrain from it. For my part, I am not aſhamed to own that I have tempted martins to build around my houſe, by fixing eſcallop ſhells, in places convenient for their pendant beds and procreant cradles; and have been pleaſed to obſerve with what caution the little architect raiſed a buttreſs under each ſhell before he ventured to form his neſt on it.

" What has induced me to ſend you theſe ſtrictures at this time, are the accounts of the ravages committed on the cultivation of corn in the United States of North America, by an inſect called the *Heſſian-Fly*. (See the article *Hessian-Fly*.) How far there is danger of this deſolating ſcourge being imported into this country by the admiſſion of American wheat, I muſt leave to abler entomologiſts to decide. But that this deſtructive inſect ſhould, as hath lately been aſſerted, totally diſappear in one ſeaſon, after having for a number of years ſucceſſively laid waſte wide extended diſtricts, is a phenomenon hardly to be aſſented to by thoſe who have turned their minds to inquiries of this ſort.

" Might I not here enlarge on the importance of reſearches into the works of the creation, when we ſee ſtateſmen, as in the preſent inſtance, making ſolemn applications to thoſe who are ſtudious of nature, requeſting their direction how to avoid the calamity apprehended from a fly? And may we not then add, that the minuteſt obſervations of this kind are only deemed trivial by the indolent and uninformed.

" I recollect but a ſingle complaint againſt the ſwallow, and that this is made by Anacreon, Od. 12. who bitterly reproaches this bird for diſturbing him by its twittering while he was dozing away the intoxication of the preceding night. Yet, had the poet been temperate, like Milton, he would with pleaſure have ariſen from his bed at the charm of earlieſt birds.

" With what joy the Grecians welcomed the return of the ſwallow, appears by the very ancient carol preſerved by Athenæus; of which the following is a tranſlation :—

> " The ſwallow! the ſwallow! ſhe does with her bring
> Soft ſeaſons and all the delights of the ſpring:
> The ſwallow! the ſwallow! we're ſure we are right,
> For her back is all black, and her belly all white.
> From your ſtores, ye good houſewives, produce, if you pleaſe,
> Lumps of figs, jugs of wine, and ſome wheat and ſome cheeſe.
> With ſome hen eggs the ſwallow will well be content.
> Muſt we go then, or ſhall we have any thing ſent?
> " We will not allow you to do as you chooſe,
> To give or give not, to comply or refuſe;
> But will certainly take from its hinges the door,
> Or bear off the good dame as ſhe ſits on the floor;
> She is little and light, we can manage her ſure.
> Open, open the door to the ſwallow—for we
> Are playful young children, not men—you may ſee."

HISPA, in zoology; a genus of inſects belonging to the coleoptera order, the characters of which are theſe: The antennæ are fuſiform, growing gradually larger from each extremity towards the middle; and are ſituated between the eyes: the thorax and elytra are covered with protuberances or ſpines. The larva of this inſect ſeems to be yet wholly unknown. There are but two ſpecies of the perfect animal met with in Europe; one of which, the atra, is found in Britain, and is all over of a deep unpoliſhed black, and has the upper part of its body entirely covered with long and ſtrong ſpines, which render it briſtly like the ſhell of a cheſnut. There is even a ſpine at the caſe of the antennæ; the thorax has a row ſet tranſverſely, which are forked; and the elytra are furniſhed with a very great number that are ſingle. Its being thus covered with ſpines, makes it reſemble a hedge-hog in miniature. It is rather hard to catch, letting itſelf fall down on the ground as ſoon as approached. It bears its antennæ upright before it.

Plate CCXXXV

HISPALIS, a town of Bætica, in the Farther Spain; an ancient mart or trading town on the Bætis, navigable quite up to it for ſhips of burthen, and thence to Corduba for river barges. Called *Colonia Romulenſis*. It has alſo a conventus juridicus, a court of juſtice, or aſſizes, (Pliny). Now called *Seville*, W. Long. 6° N. Lat. 37.

HISPANIA, called *Heſperia Ultima*, (Horace), becauſe the weſtmoſt part of Europe; alſo *Iberia* from the river Iberus. Its name *Hiſpania*, or *Spania*, (Greek)

(Greek), is of Phœnician original, from its great number of rabbits: the Phœnicians, who ſettled ſeveral colonies on the coaſt calling it *Spanjah* from theſe animals. It has the ſea on every ſide, except on that next to Gaul, from which it is ſeparated by the Pyrenees. The Romans at firſt divided it into the Farther and Hither Spain, under two prætors. In that ſtate it continued down to Auguſtus: who divided the Farther Spain into Bætica, which he left to the people to be governed by a pro-conſul; and into Luſitania, which he added to his own provinces: calling the Hither Spain *Tarraconenſis*. Hiſpania was a country celebrated for its fertility, of which it has greatly fallen ſhort in modern times. The people were of a warlike turn, (Strabo); and their bodies being formed for hardſhips and labour, they ever preferred war to peace, and were remarkably prodigal of life (Juſtin, Sil. Italicus.) Spain produced ſeveral great men, both in a literary and a political capacity. See SPAIN.

HISPANIOLA, called alſo St DOMINGO, the largeſt of the Antilles or Caribbee iſlands, extending about 420 miles from eaſt to weſt, and 120 in breadth from north to ſouth; lying between 17° 37′ and 20° of N. Lat. and between 67° 35′ and 74° 15′ W. Long. The climate is hot, but not reckoned unwholſome; and ſome of the inhabitants are ſaid to arrive at the age of 120. It is ſometimes refreſhed by breezes and rains; and its ſalubrity is likewiſe in a great meaſure owing to the beautiful variety of hills and valleys, woods, and rivers, which every where preſent themſelves. It is indeed reckoned by far the fineſt and moſt pleaſant iſland of the Antilles, as being the beſt accommodated to all the purpoſes of life when duly cultivated.

This iſland, famous for being the earlieſt ſettlement of the Spaniards in the new world, was at firſt in high eſtimation for the quantity of gold it ſupplied: this wealth diminiſhed with the inhabitants of the country, whom they obliged to dig it out of the bowels of the earth; and the ſource of it was entirely dried up, when they were exterminated, which was quickly done by a ſeries of the moſt ſhocking barbarities that ever diſgraced the hiſtory of any nation. Benzoni relates, that of two millions of inhabitants, contained in the iſland when diſcovered by Columbus in 1492, ſcarce 153 were alive in 1545. A vehement deſire of opening again this ſource of wealth inſpired the thought of getting ſlaves from Africa; but, beſides that theſe were found unfit for the labours they were deſtined to, the multitude of mines, which then began to be wrought on the continent, made thoſe of Hiſpaniola no longer of any importance. An idea now ſuggeſted itſelf, that their negroes, which were healthy, ſtrong, and patient, might be uſefully employed in huſbandry; and they adopted, through neceſſity, a wiſe reſolution, which, had they known their own intereſt, they would have embraced by choice.

The produce of their induſtry was at firſt extremely ſmall, becauſe the labourers were few. Charles V. who, like moſt ſovereigns, preferred his favourites to every thing, had granted an excluſive right of the ſlave trade to a Flemiſh nobleman, who made over his privilege to the Genoeſe. Thoſe avaricious republicans conducted this infamous commerce as all monopolies are conducted; they reſolved to ſell dear, and they ſold but few. When time and competition had fixed the natural and neceſſary price of ſlaves, the number of them increaſed. It may eaſily be imagined, that the Spaniards, who had been accuſtomed to treat the Indians as beaſts, did not entertain a higher opinion of theſe negro Africans, whom they ſubſtituted in their place. Degraded ſtill farther in their eyes by the price they had paid for them, even religion could not reſtrain them from aggravating the weight of their ſervitude. It became intolerable, and theſe wretched ſlaves made an effort to recover the unalienable rights of mankind. Their attempt proved unſucceſsful; but they reaped this benefit from their deſpair, that they were afterwards treated with leſs inhumanity.

This moderation (if tyranny cramped by the apprehenſion of revolt can deſerve that name) was attended with good conſequences. Cultivation was purſued with ſome degree of ſucceſs. Soon after the middle of the 16th century, the mother country drew annually from this colony ten millions weight of ſugar, a large quantity of wood for dying, tobacco, cocoa, caſſia, ginger, cotton and peltry in abundance. One might imagine, that ſuch favourable beginnings would give both the deſire and the means of carrying them further; but a train of events, more fatal each than the other, ruined theſe hopes.

The firſt misfortune aroſe from the depopulation of the iſland. The Spaniſh conqueſts on the continent ſhould naturally have contributed to promote the ſucceſs of an iſland, which nature ſeemed to have formed to be the centre of that vaſt dominion ariſing around it, to be the ſtaple of the different colonies. But it fell out quite otherwiſe: on a view of the immenſe fortunes raiſing in Mexico, and other parts, the richeſt inhabitants of Hiſpaniola began to deſpiſe their ſettlements, and quitted the true ſource of riches, which is on the ſurface of the earth, to go and ranſack the bowels of it for veins of gold, which are quickly exhauſted. The government endeavoured in vain to put a ſtop to this emigration; the laws were always either artfully eluded, or openly violated.

The weakneſs, which was a neceſſary conſequence of ſuch a conduct, leaving the coaſts without defence, encouraged the enemies of Spain to ravage them. Even the capital of this iſland was taken and pillaged by that celebrated Engliſh ſailor, Sir Francis Drake. The cruizers of leſs conſequence contented themſelves with intercepting veſſels in their paſſage through thoſe latitudes, the beſt known at that time of any in the new world. To complete theſe misfortunes, the Caſtilians themſelves commenced pirates. They attacked no ſhips but thoſe of their own nation; which were more rich, worſe provided, and worſe defended, than any others. The cuſtom they had of fitting out ſhips clandeſtinely, in order to procure ſlaves, prevented them from being known; and the aſſiſtance they purchaſed from the ſhips of war, commiſſioned to protect the trade, inſured to them impunity.

The foreign trade of the colony was its only reſource in this diſtreſs; and that was illicit: but as it continued to be carried on, notwithſtanding the vigilance of the governors, or, perhaps, by their connivance, the

Hiſpaniola.

the policy of an exaſperated and ſhort-ſighted court exerted itſelf in demoliſhing moſt of the ſea-ports, and driving the miſerable inhabitants into the inland country. This act of violence threw them into a ſtate of dejection; which the incurſions and ſettlement of the French on the iſland afterwards carried to the utmoſt pitch. The latter, after having made ſome unſucceſsful attempts to ſettle on the iſland, had part of it yielded to them in 1697, and now enjoy by far the beſt ſhare.

Spain, totally taken up with that vaſt empire which ſhe had formed on the continent, uſed no pains to diſſipate this lethargy. She even refuſed to liſten to the ſolicitations of her Flemiſh ſubjects, who earneſtly preſſed that they might have permiſſion to clear thoſe fertile lands. Rather than run the riſk of ſeeing them carry on a contraband trade on the coaſts, ſhe choſe to bury in oblivion a ſettlement which had been of conſequence, and was likely to become ſo again.

This colony, which had no longer any intercourſe with the mother country but by a ſingle ſhip of no great burthen, that arrived from thence every third year, conſiſted, in 1717, of 18,410 inhabitants, including Spaniards, Meſtees, Negroes, or Mulattoes. The complexion and character of theſe people differed according to the different proportions of American, European, and African blood they had received from that natural and tranſient union which reſtores all races and conditions to the ſame level. Theſe demi-ſavages, plunged in the extreme of ſloth, lived upon fruits and roots, dwelt in cottages without furniture, and moſt of them without clothes. The few among them, in whom indolence had not totally ſuppreſſed the ſenſe of decency and taſte for the conveniences of life, purchaſed clothes of their neighbours the French in return for their cattle, and the money ſent to them for the maintenance of two hundred ſoldiers, the prieſts, and the government. It doth not appear that the company, formed at Barcelona in 1757, with excluſive privileges for the re-eſtabliſhment of St Domingo, hath as yet made any conſiderable progreſs. They ſend out only two ſmall veſſels annually, which are freighted back with ſix thouſand hides, and ſome other commodities of little value. See St DOMINGO.

Hiſter, Hiſtoriographer.

Plate CCXXXV

HISTER, in zoology; a genus of the coleoptera order of inſects. The firſt articulation of the antennæ is compreſſed and curved; the laſt is conſiderably larger than the others, and appears to be a ſolid knob: the head is drawn within the body; the mouth is forcipated; the elytra are ſhorter than the body; and the fore-legs are dentated. The body of theſe creatures is poliſhed and very ſhining, and their form almoſt ſquare; the thorax large, and highly poliſhed: anteriorly it is made with a ſlope, in the cavity of which is lodged the head, the poſition of which is often only diſcovered by the projection of the maxillæ; for the head, for the moſt part, is ſo withdrawn under the thorax, that the inſect looks as if it had none. The elytra are as if it were cut off towards the extremity, and do not cover the whole of the abdomen. They are extremely ſmooth, and only have a few ſtriæ, ſcarce perceptible, ſituated chiefly towards their outward ſide. Laſtly, the hinder part of the abdomen, which projects beyond the elytra, is round and blunt. Theſe inſects are ſometimes found in cow-dung, and often on ſand. They vary prodigiouſly in ſize; but differ very little either in form or colour, they being all very dark. The larvæ, as well as the perfect inſects, are frequently met with in the dung of horſes, cows, &c.

HISTORIOGRAPHER, a profeſſed hiſtorian, or writer of hiſtory. See the next article.

The hiſtoriographer to his Britannic majeſty is an officer under the lord chamberlain; his ſalary 200l. *per annum*. There is an office of the ſame kind in Scotland, with the ſame ſalary.

HISTORY.

HISTORY, in general, ſignifies an account of ſome remarkable facts which have happened in the world, arranged in the true order in which they actually took place, together with the cauſes to which they were owing, and the different effects they have produced, as far as can be diſcovered.—The word is Greek Ιϛορια; and literally denotes a ſearch of curious things, or a deſire of knowing, or even a rehearſal of things we have ſeen; being formed from the verb Ιϛορειν, which properly ſignifies to know a thing by having ſeen it. But the idea is now much more extenſive, and is applied to the knowledge of things taken from the report of others. The origin is from the verb ιϛημι, "I know;" and hence it is, that among the ancients ſeveral of their great men were called *polyhiſtores*, i. e. perſons of various and general knowledge.

Sometimes, however, the word hiſtory is uſed to ſignify a deſcription of things, as well as an account of facts. Thus Theophraſtus calls his work, in which he has treated of the nature and properties of plants, an *hiſtory of plants*; and we have a treatiſe of Ariſtotle, intitled an *hiſtory of animals*; and to this day the deſcription of plants, animals, and minerals, are called by the general name of *natural hiſtory*.

1 Hiſtory how divided.

But what chiefly merits the name of hiſtory, and what is here conſidered as ſuch, is an account of the principal tranſactions of mankind ſince the beginning of the world; and which naturally divides itſelf into two parts, namely, *civil* and *eccleſiaſtical*. The firſt contains the hiſtory of mankind in their various relations to one another, and their behaviour, for their own emolument, or that of others, in common life; the ſecond conſiders them as acting, or pretending to act, in obedience to what they believe to be the will of the Supreme Being.—Civil hiſtory, therefore, includes an account of all the different ſtates that have exiſted in the world, and likewiſe of thoſe men who in different ages of the world have moſt eminently diſtinguiſhed themſelves either for their good or evil actions. This laſt part of civil hiſtory is uſually termed BIOGRAPHY.

Hiſtory is now conſidered as a very conſiderable branch of polite literature: few accompliſhments are more valued than an accurate knowledge of the hiſtories of different nations; and ſcarce any literary production is more regarded than a well-written hiſtory of any nation.

2 Of the ſtudy of hiſtory.

With regard to the ſtudy of hiſtory, we muſt conſider, that all the revolutions which have happened in the world, have been owing to two cauſes. 1. The connections between the different ſtates exiſting together in the world at the ſame time, or their different ſituations with regard to one another; and, 2. The different characters of the people who in all ages conſtituted theſe ſtates, their different geniuſes and diſpoſitions, &c. by which they were either prompted to undertake ſuch and ſuch actions of themſelves, or were eaſily induced to it by others. The perſon who would ſtudy hiſtory, therefore, ought in the firſt place to make himſelf acquainted with the ſtate of the world in general in all different ages; what nations inhabited the different parts of it; what their extent of territory was; at what particular time they aroſe, and when they declined. He is then to inform himſelf of the various events which have happened to each particular nation; and in ſo doing, he will diſcover many of the cauſes of thoſe revolutions, which before he only knew as facts. Thus, for inſtance, a perſon may know the Roman hiſtory from the time of Romulus, without knowing in the leaſt why the city of Rome happened to be built at that time. This cannot be underſtood without a particular knowledge of the former ſtate of Italy, and even of Greece and Aſia, ſeeing the origin of the Romans is commonly traced as high as Æneas, one of the heroes of Troy. But when all this is done, which indeed requires no ſmall labour, the hiſtorian hath yet to ſtudy the genius and diſpoſitions of the different nations, the characters of thoſe who were the principal directors of their actions, whether kings, miniſters, generals, or prieſts; and when this is accompliſhed, he will diſcover the cauſes of thoſe tranſactions in the different nations which have given riſe to the great revolutions abovementioned: after which, he may aſſume the character of one who is perfectly verſed in hiſtory.

The firſt *outline* of hiſtory, as it may be called, is moſt eaſily obtained by the inſpection of an hiſtorical chart; and that ſubjoined to the preſent treatiſe will anſwer the purpoſe as well as any. Along with this it will be proper to peruſe a ſhort abridgment of general hiſtory, from the creation of the world to the preſent time; but in this way there have been but very few attempts attended with any tolerable ſucceſs. The following is collected from reſpectable authorities, and may ſerve to help the ideas of the reader on this ſubject.

SECT. I. *Civil Hiſtory.*

3 Civil hiſtory how divided.

HISTORY, though ſeemingly incapable of any natural diviſion, will yet be found, on a nearer inſpection, to reſolve itſelf into the following periods, at each of which a great revolution took place, either with regard to the whole world, or a very conſiderable part of it. 1. The creation of man. 2. The flood. 3. The beginning of profane hiſtory, *i. e.* when all the fabulous relations of heroes, demi-gods, &c. were expelled from hiſtorical narrations, and men began to relate facts with ſome regard to truth and credibility. 4. The conqueſt of Babylon by Cyrus, and the deſtruction of the Babylonian empire. 5. The reign of Alexander the Great, and the overthrow of the Perſian empire. 6. The deſtruction of Carthage by the Romans, when the latter had no longer any rival capable of oppoſing their deſigns. 7. The reign of the emperor Trajan, when the Roman empire was brought to its utmoſt extent. 8. The diviſion of the empire under Conſtantine. 9. The deſtruction of the weſtern empire by the Heruli, and the ſettlement of the different European nations. 10. The riſe of Mahomet, and the conqueſts of the Saracens and Turks. 11. The cruſades, and all the ſpace intervening between that time and the preſent.

4 Moſaic account of the creation the only probable one.

Concerning the number of years which have elapſed ſince the creation of the world, there have been many diſputes. The compilers of the Univerſal Hiſtory determine it to have taken place in the year 4305 B.C. ſo that, according to them, the world is now in the 6096th year of its age. Others think it was created only 4000 years B. C. ſo that it hath not yet attained its 6000th year. Be this as it will, however, the whole account of the creation reſts on the truth of the Moſaic hiſtory; and which we muſt of neceſſity accept, becauſe we can find no other which does not either abound with the groſſeſt abſurdities, or lead us into abſolute darkneſs. The Chineſe and Egyptian pretenſions to antiquity are ſo abſurd and ridiculous, that the bare reading muſt be a ſufficient confutation of them to every reaſonable perſon. See the articles CHINA and EGYPT. Some hiſtorians and philoſophers are inclined to diſcredit the Moſaic accounts, from the appearances of volcanoes, and other natural phænomena: but their objections are by no means ſufficient to invalidate the authority of the ſacred writings; not to mention that every one of their own ſyſtems is liable to inſuperable objections. See the article EARTH. It is therefore reaſonable for every perſon to accept of the Moſaic account of the creation as truth; but an hiſtorian is under an abſolute neceſſity of doing it, becauſe, without it, he is quite deſtitute of any ſtandard or ſcale by which he might reduce the chronology of different nations to any agreement; and, in ſhort, without receiving this account as true, it would be in a manner impoſſible at this day to write a general hiſtory of the world.

5 Hiſtory from the creation to the flood.

1. The tranſactions during the firſt period, viz. from the creation to the flood, are very much unknown, nothing indeed being recorded of them but what is to be found in the firſt ſix chapters of Geneſis. In general, we know, that men were not at that time in a ſavage ſtate; they had made ſome progreſs in the arts, had invented muſic, and found out the method of working metals. They ſeem alſo to have lived in one vaſt community, without any of thoſe diviſions into different nations which have ſince taken place, and which evidently proceeded from the confuſion of languages. The moſt material part of their hiſtory, however, is, that having once begun to tranſgreſs the divine commands, they proceeded to greater and greater lengths of wickedneſs, till at laſt the Deity thought proper to ſend a flood on the earth, which deſtroyed the whole human race except eight perſons, viz. Noah and his family. This terrible cataſtrophe happened, according to the Hebrew copy of the Bible, 1656 years after

the creation; according to the Samaritan copy, 1307. For the different conjectures concerning the natural cauſes of the flood, ſee the article Deluge.

6 From the flood to the beginning of profane hiſtory.

2. For the hiſtory of the ſecond period we muſt again have recourſe to the Scriptures, almoſt as much as for that of the firſt. We now find the human race reduced to eight perſons poſſeſſed of nothing but what they had ſaved in the ark, and the whole world to be ſtored with animals from thoſe which had been preſerved along with theſe eight perſons. In what country their original ſettlement was, no mention is made. The ark is ſuppoſed to have reſted on Mount Ararat in Armenia*; but it is impoſſible to know whether Noah and his ſons made any ſtay in the neighbourhood of this mountain or not. Certain it is, that, ſome time after, the whole or the greateſt part of the human race were aſſembled in Babylonia, where they engaged in building a tower. This gave offence to the Deity; ſo that he puniſhed them by confounding their language; whence the diviſion of mankind into different nations.

* See *Ararat*.

7 Nations deſcended from Japhet.

According to a common opinion, Noah when dying left the whole world to his ſons, giving Aſia to Shem, Africa to Ham, and Europe to Japhet. But this hath not the leaſt foundation in Scripture. By the moſt probable accounts, Gomer the ſon of Japhet was the father of the Gomerians or Celtes; that is, all the barbarous nations who inhabited the northern parts of Europe under the various names of *Gauls, Cimbrians, Goths,* &c. and who alſo migrated into Spain, where they were called *Celtiberians*. From Magog, Meſhech, and Tubal, three of Gomers brethren, proceeded the Scythians, Sarmatians, Tartars, and Moguls. The three other ſons of Japhet, Madai, Javan, and Tiras, are ſaid to have been the fathers of the Medes, the Ionians, Greeks, and Thracians.

8 From Shem.

The children of Shem were Elam, Aſhur, Arphaxad, Lud, and Aram. The firſt ſettled in Perſia, where he was the father of that mighty nation: The deſcendants of Aſhur peopled Aſſyria, (now *Curdeſtan*): Arphaxad ſettled in Chaldæa. Lud is ſuppoſed by Joſephus to have taken up his reſidence in Lydia; though this is much controverted. Aram, with more certainty, is thought to have ſettled in Meſopotamia and Syria.

9 From Ham

The children of Ham were Cuſh, Mizraim, Phut, and Canaan. The firſt is thought to have remained in Babylonia, and to have been king of the ſouth-eaſtern parts of it afterwards called *Khuzeſtan*. His deſcendants are ſuppoſed to have removed into the eaſtern parts of Arabia; from whence they by degrees migrated into the correſponding parts of Africa. The ſecond peopled Egypt, Ethiopia, Cyrenaica, Libya, and the reſt of the northern parts of the ſame continent. The place where Phut ſettled is not known: but Canaan is univerſally allowed to have ſettled in Phœnicia; and to have founded thoſe nations who inhabited Judea, and were afterwards exterminated by the Jews.

Almoſt all the countries of the world, at leaſt of the eaſtern continent, being thus furniſhed with inhabitants, it is probable that for many years there would be few or no quarrels between the different nations. The paucity of their numbers, their diſtance from one another, and their diverſity of language, would contribute to keep them from having much communication with each other. Hence, according to the different circumſtances in which the different tribes were placed ſome would be more civilized and others more barbarous. In this interval, alſo the different nations probably acquired different characters, which afterwards they obſtinately retained, and manifeſted on all occaſions; hence the propenſity of ſome nations to monarchy, as the Aſiatics, and the enthuſiaſtic deſire of the Greeks for liberty and republicaniſm, &c.

10 Foundation of the kingdoms of Babylonia, Aſſyria, &c.

The beginning of monarchical government was very early; Nimrod the ſon of Cuſh having found means to make himſelf king of Babylonia. In a ſhort time Aſhur emigrated from the new kingdom; built Nineveh, afterwards capital of the Aſſyrian empire; and two other cities called *Rezen* and *Rehoboth*, concerning the ſituation of which we are now much in the dark. Whether Aſhur at this time ſet up as a king for himſelf, or whether he held theſe cities as vaſſal to Nimrod, is now unknown. It is probable, however, that about the ſame time various kingdoms were founded in different parts of the world; and which were great or ſmall according to different circumſtances. Thus the ſcripture mentions the kings of Egypt, Gerar, Sodom, Gomorrah, &c. in the time of Abraham; and we may reaſonably ſuppoſe, that theſe kings reigned over nations which had exiſted for ſome conſiderable time before.

11 Migration of the Iſraelites from Egypt.

The firſt conſiderable revolution we read of is the migration of the Iſraelites out of Egypt, and their eſtabliſhment in the land of Canaan. For the hiſtory of theſe tranſactions we muſt refer to the Old Teſtament, where the reader will ſee that it was attended with the moſt terrible cataſtrophe to the Egyptians, and with the utter extermination of ſome nations, the deſcendants of Ham, who inhabited Judea. Whether the overthrow of Pharoah in the Red Sea could affect the Egyptian nation in ſuch a manner as to deprive them of the greateſt part of their former learning, and to keep them for ſome ages after in a barbarous ſtate is not eaſily determined; but unleſs this was the caſe, it ſeems exceedingly difficult to account for the total ſilence of their records concerning ſuch a remarkable event, and indeed for the general confuſion and uncertainty in which the early hiſtory of Egypt is involved. The ſettlement of the Jews in the promiſed land of Canaan is ſuppoſed to have happened about 1491 B. C.

12 Hiſtory of the Greeks.

For near 200 years after this period we find no account of any other nations than thoſe mentioned in ſcripture. About 1280 B. C. the Greeks began to make other nations feel the effects of that enterpriſing and martial ſpirit for which they were ſo remarkable, and which they had undoubtedly exerciſed upon one another long before. The firſt enterpriſe was an invaſion of Colchis (now *Mingrelia*), for the ſake of the golden fleece. Whatever was the nature of this expedition, it is probable they ſucceeded in it; and it is likewiſe probable, that it was this ſpecimen of the riches of Aſia which inclined them ſo much to Aſiatic expeditions ever after. All this time we are totally in the dark about the ſtate of Aſia and Africa, except in ſo far as can be conjectured from ſcripture. The ancient empires of Babylon, Aſſyria, and Perſia, probably

bably ſtill continued in the former continent, and Egypt and Ethiopia ſeem to have been conſiderable kingdoms in the latter.

About 1184 years B. C. the Greeks again diſtinguiſhed themſelves by their expedition againſt Troy, a city of Phrygia Minor; which they plundered and burnt, maſſacring the inhabitants with the moſt unrelenting cruelty. Æneas, a Trojan prince, eſcaped with ſome followers into Italy, where he became the remote founder of the Roman empire. At this time Greece was divided into a number of ſmall principalities, moſt of which ſeem to have been in ſubjection to Agamemnon king of Mycene. In the reign of Atreus, the father of this Agamemnon, the Heraclidæ, or deſcendants of Hercules, who had been formerly baniſhed by Euryſtheus, were again obliged to leave this country. Under their champion Hyllus they claimed the kingdom of Mycenæ as their right, pretending that it belonged to their great anceſtor Hercules, who was unjuſtly deprived of it by Euryſtheus*. The controverſy was decided by ſingle combat; but Hyllus being killed, they departed, as had been before agreed, under a promiſe of not making any attempt to return for 50 years. About the time of the Trojan war, alſo, we find the Lydians, Myſians, and ſome other nations of Aſia Minor, firſt mentioned in hiſtory. The names of the Greek ſtates mentioned during this uncertain period are, 1. Sicyon. 2. Leleg. 3. Meſſina. 4. Athens. 5. Crete. 6. Argos. 7. Sparta. 8. Pelaſgia. 9. Theſſaly. 10. Attica. 11. Phocis. 12. Locris. 13. Ozela. 14. Corinth. 15. Eleuſina. 16. Elis. 17. Pilus. 18. Arcadia. 19. Egina. 20. Ithaca. 21. Cephalone. 22. Phthia. 23. Phocidia. 24. Ephyra. 25. Eolia. 26. Thebes. 27. Caliſta. 28. Etolia. 29. Doloppa. 30. Oechalia. 31. Mycenæ. 32. Eubœa. 33. Mynia. 34. Doris. 35. Phera. 36. Iola. 37. Trachina. 38. Thraſprocia. 39. Myrmidonia. 40. Salamine. 41. Scyros. 42. Hyperia or Melite. 43. The Vulcanian iſles. 44. Megara. 45. Epirus. 46. Achaia. 47. The iſles of the Egean Sea. Concerning many of theſe we know nothing beſides their names: the moſt remarkable particulars concerning the reſt may be found under their reſpective articles.

13
Of the Jews.

About 1048 B. C. the kingdom of Judea under king David approached its utmoſt extent of power. In its moſt flouriſhing condition, however, it never was remarkable for the largeneſs of its territory. In this reſpect it ſcarce exceeded the kingdom of Scotland; though, according to the accounts given in ſcripture, the magnificence of Solomon was ſuperior to that of the moſt potent monarchs on earth. This extraordinary wealth was owing partly to the ſpoils amaſſed by king David in his conqueſts over his various enemies, and partly to the commerce with the Eaſt-Indies which Solomon had eſtabliſhed. Of this commerce he owed his ſhare to the friendſhip of Hiram king of Tyre, a city of Phœnicia, whoſe inhabitants were now the moſt famed for commercial ſkill in maritime affairs of any in the whole world.

After the death of Solomon, which happened about 975 B. C. the Jewiſh empire began to decline, and ſoon after many powerful ſtates aroſe in different parts of the world. The diſpoſition of mankind in general ſeems now to have taken a new turn, not eaſily accounted for. In former times whatever wars might have taken place between neighbouring nations, we have no account of any extenſive empire in the whole world, or that any prince undertook to reduce far diſtant nations to his ſubjection. The empire of Egypt indeed is ſaid to have been extended immenſely to the eaſt, even before the days of Seſoſtris. Of this country, however, our accounts are ſo imperfect, that ſcarce any thing can be concluded from them. But now, as it were all at once, we find almoſt every nation aiming at univerſal monarchy, and refuſing to ſet any bounds whatever to its ambition. The firſt ſhock given to the Jewiſh grandeur was the diviſion of the kingdom into two through the imprudence of Rehoboam. This rendered it more eaſily a prey to Shiſhak king of Egypt; who five years after came and pillaged Jeruſalem, and all the fortified cities of the kingdom of Judah. The commerce to the Eaſt-Indies was now diſcontinued, and conſequently the ſources of wealth in a great meaſure ſtopped; and this added to the perpetual wars between the kings of Iſrael and Judah, contributed to that remarkable and ſpeedy decline which is now ſo eaſily to be obſerved in the Jewiſh affairs.

Whether this king Shiſhak was the Seſoſtris of profane writers or not, his expedition againſt Jeruſalem as recorded in ſcripture ſeems very much to reſemble the deſultory conqueſt aſcribed to Seſoſtris. His infantry is ſaid to have been innumerable. Compoſed of different African nations; and his cavalry 60,000, with 1200 chariots; which agrees pretty well with the mighty armament aſcribed to Seſoſtris, and of which an account is given under the article EGYPT, nº 2. There indeed his cavalry are ſaid to have been only 24,000; but the number of his chariots are increaſed to 27,000; which laſt may not unreaſonably be reckoned an exaggeration, and theſe ſupernumerary chariots may have been only cavalry: but unleſs we allow Seſoſtris to be the ſame with Shiſhak, it ſeems impoſſible to fix on any other king of Egypt that can be ſuppoſed to have undertaken this expedition in the days of Solomon.

14
Of the Syrians.

Though the Jews obtained a temporary deliverance from Shiſhak, they were quickly after attacked by new enemies. In 941 B. C. one Zerah an Ethiopian invaded Judæa with an army of a million of infantry and 300 chariots; but was defeated with great ſlaughter by Aſa king of Judah, who engaged him with an army of 580,000 men. About this time alſo we find the Syrians grown a conſiderable people, and bitter enemies both to the kings of Iſrael and Judah; aiming in fact at the conqueſt of both nations. Their kingdom commenced in the days of David, under Hadadezer, whoſe capital was Zobah, and who probably was at laſt obliged to become David's tributary, after having been defeated by him in ſeveral engagements. Before the death of David, however, one Rezon, who it ſeems had rebelled againſt Hadadezer, having found means to make himſelf maſter of Damaſcus, erected there a new kingdom, which ſoon became very powerful. The Syrian princes being thus in the neighbourhood of the two rival ſtates of Iſrael and Judah (whoſe capitals were Samaria and Jeruſalem), found it an eaſy matter to weaken them both, by pretending to aſſiſt the one againſt the other; but a detail of the tranſactions between the Jews and Syrians is only to be found in the Old Teſtament, to which we refer. In 740 B. C. however, the Syrian empire was totally deſtroyed by Tiglath Pileſer king of Aſſyria; as was alſo the kingdom of Samaria by Shalmaneſer his ſucceſſor in 721. The people were either maſſacred, or carried into captivity into Media, Perſia, and the countries about the Caſpian Sea.

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* See *Hercules*.

15
Of the Weſtern nations,

While the nations of the eaſt were thus deſtroying each other, the foundations of very formidable empires were laid in the weſt, which in proceſs of time were to ſwallow up almoſt all the eaſtern ones. In Africa, Carthage was founded by a Tyrian colony, about 869 B. C. according to thoſe who aſcribe the higheſt antiquity to that city; but, according to others, it was founded only in 769 or 770 B. C. In Europe a very conſiderable revolution took place about 900 B. C. The Heraclidæ, whom we have formerly ſeen expelled from Greece by Atreus the father of Agamemnon, after ſeveral unſucceſsful attempts, at laſt conquered the whole Peloponneſus. From this time the Grecian ſtates became more civilized, and their hiſtory leſs obſcure. The inſtitution, or rather the revival and continuance of the Olympic games, in 776 B. C. alſo greatly facilitated the writing not only of their hiſtory, but that of other nations; for as each Olympiad conſiſted of four years, the chronology of every important event became indubitably fixed by referring it to ſuch and ſuch an Olympiad. In 748 B. C. or the laſt year of the ſeventh Olympiad, the foundations of the city of Rome were laid by Romulus; and, 43 years after, the Spartan ſtate was new modelled, and received from Lycurgus thoſe laws, by obſerving of which it afterwards arrived at ſuch a pitch of ſplendor.

16
State of the world at the beginning of the third general period.

With the beginning of the 28th Olympiad, or 568 B. C. commences the third general period above mentioned, when profane hiſtory becomes ſomewhat more clear, and the relations concerning the different nations may be depended upon with ſome degree of certainty. The general ſtate of the world was at that time as follows.—The northern parts of Europe were either thinly inhabited, or filled with unknown and barbarous nations, the anceſtors of thoſe who afterwards deſtroyed the Roman empire. France and Spain were inhabited by the Gomerians or Celtes. Italy was divided into a number of petty ſtates, ariſing partly from Gauliſh and partly from Grecian colonies; among which the Romans had already become formidable. They were governed by their king Servius Tullius; had increaſed their city by the demolition of Alba Longa, and the removal of its inhabitants to Rome; and had enlarged their dominions by ſeveral cities taken from their neighbours. Greece was alſo divided into a number of ſmall ſtates, among which the Athenians and Spartans, being the moſt remarkable, were rivals to each other. The former had, about 599 B. C. received an excellent legiſlation from Solon, and were enriching themſelves by navigation and commerce: the latter were become formidable by the martial inſtitutions of Lycurgus; and having conquered Meſſina, and added its territory to their own, were juſtly eſteemed the moſt powerful people in Greece. The other ſtates of moſt conſideration were Corinth, Thebes, Argos, and Arcadia.—In Aſia great revolutions had taken place. The ancient kingdom of Aſſyria was deſtroyed by the Medes and Babylonians, its capital city Nineveh utterly ruined, and the greateſt part of its inhabitants carried to Babylon. Nay, the very materials with which it was built were carried off, to adorn and give ſtrength to that ſtately metropolis, which was then undoubtedly the firſt city in the world. Nebuchadnezzar, a wiſe and valiant prince, now ſat on the throne of Babylon. By him the kingdom of Judæa was totally overthrown in 587 B. C. Three years before this he had taken and razed the city of Tyre, and over-run all the kingdom of Egypt. He is even ſaid by Joſephus to have conquered Spain, and reigned there nine years, after which he abandoned it to the Carthaginians; but this ſeems by no means probable. The extent of the Babylonian empire is not certainly known: but from what is recorded of it we may conclude, that it was not at all inferior even in this reſpect to any that ever exiſted; as the ſcripture tells us it was ſuperior in wealth to any of the ſucceeding ones. We know that it comprehended Phœnicia, Paleſtine, Syria, Babylonia, Media, and Perſia, and not improbably India alſo; and from a conſideration of this vaſt extent of territory, and the riches with which every one of theſe countries abounded, we may form ſome idea of the wealth and power of this monarch. When we conſider alſo, that the whole ſtrength of this mighty empire was employed in beautifying the metropolis, we cannot look upon the wonders of that city as related by Herodotus to be at all incredible. See BABYLON; and ARCHITECTURE, nº 13. As to what paſſed in the republic of Carthage about this time, we are quite in the dark; there being a chaſm in its hiſtory for no leſs than 300 years.

17
Fourth period. Hiſtory of the Babylonian empire.

4. The fourth general period of hiſtory, namely, from the end of the fabulous times to the conqueſt of Babylon by Cyrus, is very ſhort, including no more than 31 years. This ſudden revolution was occaſioned by the miſconduct of Evil-merodach, Nebuchadnezzar's ſon, even in his father's life-time. For having, in a great hunting-match on occaſion of his marriage, entered the country of the Medes, and ſome of his troops coming up at the ſame time to relieve the garriſons in thoſe places, he joined them to thoſe already with him, and without the leaſt provocation began to plunder and lay waſte the neighbouring country. This produced an immediate revolt, which quickly extended over all Media and Perſia. The Medes, headed by Aſtyages and his ſon Cyaxares, drove back Evil-merodach and his party with great ſlaughter; nor doth it appear that they were afterwards reduced even by Nebuchadnezzar himſelf. The new empire continued daily to gather ſtrength; and at laſt Cyrus, Aſtyages's grandſon, a prince of great prudence and valour, being made generaliſſimo of the Median and Perſian forces, took Babylon itſelf in the year 538 B. C. as related under the article BABYLON.

18
Of the Romans, Greeks, Lydians, and Perſians.

During this period the Romans increaſed in power under the wiſe adminiſtration of their king Servius Tullius, who, though a pacific prince, rendered his people more formidable by a peace of 20 years than his predeceſſors had done by all their victories. The Greeks, even at this early period, began to interfere with the Perſians, on account of the Ionians or Grecian colonies in Aſia Minor. Theſe had been ſubdued by Crœſus king of Lydia about the year 562, the time of Nebuchadnezzar's death. Whether the Lydians had been ſubdued by the Babyloniſh monarch or not, is not now to be aſcertained; though it is very probable that they were either in ſubjection to him, or greatly awed by his power, as before his death nothing conſiderable was undertaken by them. It is indeed probable, that during the inſanity of Nebuchadnezzar, ſpoken of by Daniel, the affairs of his kingdom would fall into confuſion; and many of thoſe princes whom he formerly retained in ſubjection would ſet up for themſelves. Certain it is, however, that if the Babylonians did not regard Crœſus as their ſubject, they looked upon him to be a very faithful ally; inſomuch that they celebrated an annual feaſt in commemoration of a victory obtained by him over the Scythians. After the death of Nebuchadnezzar, Crœſus ſubdued many nations in Aſia Minor, and among the reſt the Ionians, as already related. They were, however, greatly attached to his government; for though they paid him tribute, and were obliged to furniſh him with ſome forces in time of war, they were yet free from all kind of oppreſſion. When Cyrus therefore was proceeding in his conqueſts of different parts of the Babyloniſh empire, before he proceeded to attack the capital, the Ionians refuſed to ſubmit to him, though he offered them very advantageous terms. But ſoon after, Crœſus himſelf being defeated and taken priſoner, the Ionians ſent ambaſſadors to Cyrus, offering to ſubmit on the terms which had formerly been propoſed. Theſe terms were now refuſed; and the Ionians being determined to reſiſt, applied to the Spartans for aid. Though the Spartans at that time could not be prevailed upon to give their countrymen any aſſiſtance, they ſent ambaſſadors to Cyrus with a threatening meſſage; to which he returned a contemptuous anſwer, and then forced the Ionians to ſubmit at diſcretion, five years before the taking of Babylon. Thus commenced the hatred between the Greeks and Perſians; and thus we ſee, that in the two firſt great monarchies the ſeeds of their deſtruction were ſown even before the monarchies themſelves were eſtabliſhed. For while Nebuchadnezzar was raiſing the Babyloniſh empire to its utmoſt height, his ſon was deſtroying what his father built up; and at the very time when Cyrus was eſtabliſhing the Perſian monarchy, by his ill-timed ſeverity to the Greeks he made that warlike people his enemies, whom his ſucceſſors were by no means able to reſiſt, and who would probably have overcome Cyrus himſelf, had they united in order to attack him. The tranſactions of Africa during this period are almoſt entirely unknown; though we cannot doubt that the Carthaginians enriched themſelves by means of their commerce, which enabled them afterwards to attain to ſuch a conſiderable ſhare of power.

19
Fifth general period. Hiſtory of the Jews, Babylonians, Egyptians, &c.

5. Cyrus having now become maſter of all the eaſt, the Aſiatic affairs continued for ſome time in a ſtate of tranquillity. The Jews obtained leave to return to their own country, rebuild their temple, and again eſtabliſh their worſhip, of all which an account is given in the ſacred writings, though undoubtedly they muſt have been in a ſtate of dependence on the Perſians from that time forward. Cambyſes the ſucceſſor of Cyrus added Egypt to his empire, which had either not ſubmitted to Cyrus, or revolted ſoon after his death. He intended alſo to have ſubdued the Carthaginians; but as the Phœnicians refuſed to ſupply him with ſhips to fight againſt their own countrymen, he was obliged to lay this deſign aſide.

In 517 B. C. the Babylonians finding themſelves grievouſly oppreſſed by their Perſian maſters, reſolved to ſhake off the yoke, and ſet up for themſelves. For this purpoſe, they took care to ſtore their city with all manner of proviſions; and when Darius Hyſtaſpes, then king of Perſia, advanced againſt them, they took the moſt barbarous method that can be imagined of preventing an unneceſſary conſumption of thoſe proviſions, which they had ſo carefully amaſſed. Having collected all the women, old men, and children, into one place, they ſtrangled them without diſtinction, whether wives, fathers, mothers, brothers, or ſiſters; every one being allowed to ſave only the wife he liked beſt, and a maid ſervant to do the work of the houſe. This cruel policy did not avail them: their city was taken by treachery (for it was impoſſible to take it by force); after which the king cauſed the walls of it to be beaten down from 200 to 50 cubits height, that their ſtrength might no longer give encouragement to the inhabitants to revolt. Darius then turned his arms againſt the Scythians; but finding that expedition turn out both tedious and unprofitable, he directed his courſe eaſtward, and reduced all the country as far as the river Indus. In the mean time, the Ionians revolted; and being aſſiſted by the Greeks, a war commenced between the two nations, which was not thoroughly extinguiſhed but by the deſtruction of the Perſian empire, in 330 B. C. The Ionians, however, were for this time obliged to ſubmit, after a war of ſix years; and were treated with great ſeverity by the Perſians. The conqueſt of Greece itſelf was then projected: but the expeditions for that purpoſe ended moſt unfortunately for the Perſians, and encouraged the Greeks to make repriſals on them, in which they ſucceeded according to their utmoſt wiſhes; and had it only been poſſible for them to have agreed among themſelves, the downfal of the Perſian empire would have happened much ſooner than it did. See ATHENS, SPARTA, MACEDON, and PERSIA.

In 459 B. C. the Egyptians made an attempt to recover their liberty, but were reduced after a war of ſix years. In 413 B. C. they revolted a ſecond time: and being aſſiſted by the Sidonians, drew upon the latter that terrible deſtruction foretold by the prophets; while they themſelves were ſo thoroughly humbled, that they never after made any attempt to recover their liberty.

20
Xenophon's retreat.

The year 403 B. C. proved remarkable for the revolt of Cyrus againſt his brother Artaxerxes Mnemon; in which, through his own raſhneſs, he miſcarried, and loſt his life at the battle of Cunaxa in the province of Babylon. Ten thouſand Greek mercenaries, who ſerved in his army, made their way back into Greece, though ſurrounded on all ſides by the enemy, and in the heart of a hoſtile country. In this retreat they were commanded by Xenophon, who has received the higheſt praiſes on account of his conduct and military ſkill in bringing it to a happy concluſion. Two years after, the invaſions of Ageſilaus king of Sparta threatened the Perſian empire with total deſtruction; from which however, it was relieved by his being recalled in order to defend his own country againſt the other Grecian ſtates; and after this the Perſian affairs continued in a more proſperous way till the time of Alexander.

21 Hiſtory of the Greeks.

During all this time, the volatile and giddy temper of the Greeks, together with their enthuſiaſtic deſire of romantic exploits, were preparing fetters for themſelves, which indeed ſeemed to be abſolutely neceſſary to prevent them from deſtroying one another. A zeal for liberty was what they all pretended; but on every occaſion it appeared, that this love of liberty was only a deſire of dominion. No ſtate in Greece could bear to ſee another equal to itſelf; and hence their perpetual conteſts for pre-eminence, which could not but weaken the whole body, and render them an eaſy prey to an ambitious and politic prince, who was capable of taking advantage of thoſe diviſions. Being all equally impatient of reſtraint, they never could bear to ſubmit to any regular government; and hence their determinations were nothing but the deciſions of a mere mob, of which they had afterwards almoſt conſtantly reaſon to repent. Hence alſo their baſe treatment of thoſe eminent men whom they ought moſt to have honoured; as Miltiades, Ariſtides, Themiſtocles, Alcibiades, Socrates, Phocion, &c. The various tranſactions between the Grecian ſtates, though they make a very conſiderable figure in particular hiſtory, make none at all in a general ſketch of the hiſtory of the world. We ſhall therefore only obſerve, that in 404 B. C. the Athenian power was in a manner totally broken by the taking of their city by the Spartans. In 370, that of the Spartans received a ſevere check from the Thebans at the battle of Leuctra; and eight years after was ſtill further reduced by the battle of Mantinea. Epaminondas the great enemy of the Spartans was killed; but this only proved a more ſpeedy means of ſubjugating all the ſtates to a foreign, and at that time deſpicable, power. The Macedonians, a barbarous nation, lying to the north of the ſtates of Greece, were two years after the death of Epaminondas reduced to the loweſt ebb by the Illyrians, another nation of barbarians in the neighbourhood. The king of Macedon being killed in an engagement, Philip his brother departed from Thebes, where he had ſtudied the art of war under Epaminondas, in order to take poſſeſſion of his kingdom. Being a man of great prudence and policy, he quickly ſettled his own affairs; vanquiſhed the Illyrians; and, being no ſtranger to the weakened ſituation of Greece, began almoſt immediately to meditate the conqueſt of it. The particulars of this enterprize are related under the article MACEDON: here it is ſufficient to take notice, that by firſt attacking thoſe he was ſure he could overcome, by corrupting thoſe whom he thought it dangerous to attack, by ſometimes pretending to aſſiſt one ſtate and ſometimes another, and by impoſing upon all as beſt ſerved his turn, he at laſt put it out of the power of the Greeks to make any reſiſtance, at leaſt ſuch as could keep him from gaining his end. In 338 B. C. he procured himſelf to be elected general of the Amphictyons, or council of the Grecian ſtates, under pretence of ſettling ſome troubles at that time in Greece; but having once obtained liberty to enter that country with an army, he quickly convinced the ſtates that they muſt all ſubmit to his will. He was oppoſed by the Athenians and Thebans; but the inteſtine wars of Greece had cut off all her great men, and no general was now to be found capable of oppoſing Philip with ſucceſs.

The king of Macedon being now maſter of all Greece, projected the conqueſt of Aſia. To this he was encouraged by the ill ſucceſs which had attended the Perſians in their expeditions againſt Greece, the ſucceſſes of the Greeks in their invaſions, and the retreat of the ten thouſand under Xenophon. All theſe events ſhowed the weakneſs of the Perſians, their vaſt inferiority to the Greeks in military ſkill, and how eaſily their empire might be overthrown by a proper union among the ſtates.

22 Conqueſt of Perſia by Alexander.

Philip was preparing to enter upon his grand deſign, when he was murdered by ſome aſſaſſins. His ſon Alexander was poſſeſſed of every quality neceſſary for the execution of ſo great a plan; and his impetuoſity of temper made him execute it with a rapidity unheard of either before or ſince. It muſt be confeſſed, indeed, that the Perſian empire was now ripe for deſtruction, and could not in all probability have withſtood an enemy much leſs powerful than Alexander. The Aſiatics have in all ages been much inferior to the European nations in valour and military ſkill. They were now ſunk in luxury and effeminacy; and what was worſe, they ſeem at this period to have been ſeized with that infatuation and diſtraction of counſels which ſcarce ever fails to be a forerunner of the deſtruction of any nation. The Perſian miniſters perſuaded their ſovereign to reject the prudent advice that was given him, of diſtreſſing Alexander by laying waſte the country, and thus forcing him to return for want of proviſions. Nay, they even prevented him from engaging the enemy in the moſt proper manner, by dividing his forces; and perſuaded him to put Charidemus the Athenian to death, who had promiſed, with 100,000 men, of whom one third were mercenaries, to drive the Greeks out of Aſia. In ſhort, Alexander met with only two checks in his Perſian expedition. The one was from the city of Tyre, which for ſeven months reſiſted his utmoſt efforts; the other was from Memnon the Rhodian, who had undertaken to invade Macedonia. The firſt of theſe obſtacles Alexander at laſt got over, and treated the governor and inhabitants with the utmoſt cruelty. The other was ſcarce felt; for Memnon died after reducing ſome of the Grecian iſlands, and Darius had no other general capable of conducting the undertaking. The power of the Perſian empire was totally broke by the victory gained over Darius at Arbela in 331 B. C. and next year a total end was put to it by the murder of the king by Beſſus one of his ſubjects.

23 His conqueſt of other nations.

The ambition of Alexander was not to be ſatisfied with the poſſeſſion of the kingdom of Perſia, or indeed of any other on earth. Nothing leſs than the total ſubjection of the world itſelf ſeemed ſufficient to him; and therefore he was now prompted to invade every country of which he could only learn the name, whether it had belonged to the Perſians or not. In conſequence of this diſpoſition, he invaded and reduced Hyrcania, Bactria, Sogdia, and all that vaſt tract of country now called *Bukharia*. At laſt, having entered India, he reduced all the nations to the river Hyphaſis, one of the branches of the Indus. But when he would have proceeded farther, and extended his conqueſts quite to the eaſtern extremities of Aſia, his troops poſitively refuſed to follow him farther, and he was conſtrained to return. In 323, this mighty conqueror died of a fever; without having time to ſettle the affairs of his vaſt extended empire, or even to name his ſucceſſor.

24 Hiſtory of the Romans.

While the Grecian empire thus ſuddenly ſprung up in the eaſt, the rival ſtates of Rome and Carthage were making conſiderable advances in the weſt. The Romans were eſtabliſhing their empire on the moſt ſolid foundations; to which their particular ſituation naturally contributed. Being originally little better than a parcel of lawleſs banditti, they were deſpiſed and hated by the neighbouring ſtates. This ſoon produced wars; in which, at firſt from accidental circumſtances, and afterwards from their ſuperior valour and conduct, the Romans proved almoſt conſtantly victorious. The jealouſies which prevailed among the Italian ſtates, and their ignorance of their true intereſt, prevented them from combining againſt that aſpiring nation, and cruſhing it in its infancy, which they might eaſily have done; while in the mean time the Romans, being kept in a ſtate of continual warfare, became at laſt ſuch expert ſoldiers, that no other ſtate on earth could reſiſt them. During the time of their kings they had made a very conſiderable figure among the Italian nations; but after their expulſion, and the commencement of the republic, their conqueſts became much more rapid and extenſive. In 501 B. C. they ſubdued the Sabines; eight years after, the Latins; and in 399 the city of Veii, the ſtrongeſt in Italy excepting Rome itſelf, was taken after a ſiege of ten years. But in the midſt of their ſucceſſes a ſudden irruption of the Gauls had almoſt put an end to their power and nation at once. The city was burnt to the ground in 383 B.C. and the capitol on the point of being ſurpriſed, when the Gauls, who were climbing up the walls in the night were accidentally diſcovered and repulſed*. In a ſhort time Rome was rebuilt with much greater ſplendor than before; but now a general revolt and combination of the nations formerly ſubdued took place. The Romans, however, ſtill got the better of their enemies; but, even at the time of the celebrated Camillus's death, which happened about 352 B. C. their territories ſcarce extended ſix or ſeven leagues from the capital. The republic from the beginning was agitated by thoſe diſſentions which at laſt proved its ruin. The people had been divided by Romulus into two claſſes, namely *Patricians* and *Plebeians*, anſwering to Britiſh nobility and commonalty. Between theſe two bodies were perpetual jealouſies and contentions; which retarded the progreſs of the Roman conqueſts, and revived the hopes of the nations they had conquered. The tribunes of the people were perpetually oppoſing the conſuls and military tribunes. The ſenate had often recourſe to a dictator endowed with abſolute power; and then the valour and experience of the Roman troops made them victorious: but the return of domeſtic ſeditions gave the ſubjugated nations an opportunity of ſhaking off the yoke. Thus had the Romans continued for near 400 years, running the ſame round of wars with the ſame enemies, and reaping very little advantage from their conqueſts, till at laſt matters were compounded by chooſing one of the conſuls from among the plebeians; and from this time chiefly we may date the proſperity of Rome, ſo that by the time that Alexander the Great died they were held in conſiderable eſtimation among foreign nations.

25 Of the Carthaginians, and of Sicily.

The Carthaginians in the mean time continued to enrich themſelves by commerce; but, being leſs converſant in military affairs, were by no means equal to the Romans in power, though they excelled them in wealth. A new ſtate, however, made its appearance during this period, which may be ſaid to have taught the Carthaginians the art of war, and by bringing them into the neighbourhood of the Romans, proved the firſt ſource of contention between theſe two powerful nations. This was the iſland of Sicily. At what time people were firſt ſettled on it, is not now to be aſcertained. The firſt inhabitants we read of were called *Sicani, Siculi, Læſtrigones*, &c. but of theſe we know little or nothing. In the ſecond year of the 17th Olympiad, or 710 B. C. ſome Greek colonies are ſaid to have arrived on the iſland, and in a ſhort time founded ſeveral cities, of which Syracuſe was the chief. The Syracuſans at laſt ſubdued the original inhabitants; though it doth not appear that the latter were ever well affected to their government, and therefore were on all occaſions ready to revolt. The firſt conſiderable prince, or, (as he is called by the Greeks) *tyrant* of Syracuſe, was Gelon, who obtained the ſovereignty about the year 483 B. C. At what time the Carthaginians firſt carried their arms into Sicily is not certainly known; only we are aſſured, that they poſſeſſed ſome part of the iſland as early as 505 B. C. For in the time of the firſt conſuls, the Romans and Carthaginians entered into a treaty chiefly in regard to matters of navigation and commerce; by which it was ſtipulated, that the Romans who ſhould touch at Sardinia, or that part of the iſland which belonged to Carthage ſhould be received there in the ſame manner as the Carthaginians themſelves. Whence it appears, that the dominion of Carthage already extended over Sardinia and part of Sicily: but in 28 years after, they had been totally driven out by Gelon; which probably was the firſt exploit performed by him. This appears from his ſpeech to the Athenian and Spartan ambaſſadors who deſired his aſſiſtance againſt the forces of Xerxes king of Perſia. The Carthaginians made many attempts to regain their poſſeſſions in this iſland, which occaſioned long and bloody wars between them and the Greeks, as related under the articles CARTHAGE and SICILY. This iſland alſo proved the ſcene of much ſlaughter and bloodſhed in the wars of the Greeks with one another*. Before the year 325 B.C. however, the Carthaginians had made themſelves maſters of a very conſiderable part of the iſland; from whence all the power of the Greeks could not diſlodge them. It is proper alſo to obſerve, that after the deſtruction of Tyre by Alexander the Great, almoſt all the commerce in the weſtern part of the world fell to the ſhare of the Carthaginians. Whether they had at this time made any ſettlement in Spain, is not known. It is certain, that they traded to that country for the ſake of the ſilver, in which it was very rich; as they probably alſo did to Britain, for the tin with which it abounded.

26 Sixth period. Hiſtory of the Macedonian empire.

6. The beginning of the ſixth period preſents us with a ſtate of the world entirely different from the foregoing. We now behold all the eaſtern part of the world, from the confines of Italy to the river Indus,

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* See *Rome*.

* See *Athens* and *Sparta*.

and beyond it, newly united in one vaſt empire, and at the ſame time ready to fall to pieces for want of a proper head; the weſtern world filled with fierce and ſavage nations, whom the rival republics of Carthage and Rome were preparing to enſlave as faſt as they could. The firſt remarkable events took place in the Macedonian empire.—Alexander, as already obſerved, had not diſtinctly named any ſucceſſor; but he had left behind him a victorious, and, we may ſay, invincible army, commanded by moſt expert officers, all of them ambitious of ſupreme authority. It is not to be ſuppoſed that peace could long be preſerved in ſuch a ſituation. For a number of years, indeed, nothing was to be ſeen or heard of but the moſt horrid ſlaughters, and wickedneſs of every kind; until at laſt the mother, wives, children, brothers, and even ſiſters of Alexander were cut off; not one of the family of that great conqueror being left alive. When matters were a little ſettled, four new empires, each of them of no ſmall extent, had ariſen out of the empire of Alexander. Caſſander, the ſon of Antipater, had Macedonia, and all Greece; Antigonus, Aſia Minor; Seleucus had Babylon, and the eaſtern provinces; and Ptolemy Lagus, Egypt, and the weſtern ones. One of theſe empires, however, quickly fell; Antigonus being defeated and killed by Seleucus and Lyſimachus at the battle of Ipſus, in 301 B. C. The greateſt part of his dominions then fell to Seleucus; but ſeveral provinces took the opportunity of theſe confuſions to ſhake off the Macedonian yoke altogether; and thus were formed the kingdoms of Pontus, Bithynia, Pergamus, Armenia, and Cappadocia. The two moſt powerful and permanent empires, however, were thoſe of Syria, founded by Seleucus, and Egypt by Ptolemy Lagus. The kings of Macedon, though they did not preſerve the ſame authority over the Grecian ſtates that Alexander, Antipater, and Caſſander, had done, yet effectually prevented them from thoſe outrages upon one another, for which they had formerly been ſo remarkable. Indeed, it is ſomewhat difficult to determine whether their condition was better or worſe than before they were conquered by Philip; ſince, though they were now prevented from deſtroying one another, they were moſt grievouſly oppreſſed by the Macedonian tyrants.

27
Of the Romans and Carthaginians.

While the eaſtern parts of the world were thus deluged with blood, and the ſucceſſors of Alexander were pulling to pieces the empire which he had eſtabliſhed; the Romans and Carthaginians proceeded in their attempts to enſlave the nations of the weſt. The Romans, ever engaged in war, conquered one city and ſtate after another, till about the year 253 B.C. they had made themſelves maſters of almoſt the whole of Italy. During all this time they had met only with a ſingle check in their conqueſts; and that was the invaſion of Pyrrhus, king of Epirus. That ambitious and fickle prince had projected the conqueſt of Italy, which he fancied would be an eaſy matter. Accordingly, in 271 B. C. he entered that country, and maintained a war with the Romans for ſix years; till at laſt, being utterly defeated by Curius Dentatus, he was obliged to return.

The Romans had no ſooner made themſelves maſters of Italy, than they wanted only a pretence to carry their arms out of it; and this pretence was ſoon found out. Being invited into Sicily to aſſiſt the Mamertines againſt Hiero king of Syracuſe and the Carthaginians, they immediately commenced a war with the latter, which continued with the utmoſt fury for 23 years. The war ended greatly to the diſadvantage of the Carthaginians, chiefly owing to the bad conduct of their generals; none of whom, Hamilcar Barcas alone excepted, ſeem to have been poſſeſſed of any degree of military ſkill; and the ſtate had ſuffered too many misfortunes before he entered upon the command, for him or any other to retrieve it at that time. The conſequence of this war was the entire loſs of Sicily to the Carthaginians; and ſoon after, the Romans ſeized on the iſland of Sardinia.

Hamilcar perceiving that there was now no alternative, but that in a ſhort time either Carthage muſt conquer Rome, or Rome would conquer Carthage, bethought himſelf of a method by which his country might become equal to that haughty republic. This was by reducing all Spain, in which the Carthaginians had already conſiderable poſſeſſions, and from the mines of which they drew great advantages. He had, therefore, no ſooner finiſhed the war with the mercenaries, which ſucceeded that with the Romans, than he ſet about the conqueſt of Spain. This, however, he did not live to accompliſh, though he made great progreſs in it. His ſon Aſdrubal continued the war with ſucceſs; till at laſt, the Romans, jealous of his progreſs, perſuaded him to enter into a treaty with them, by which he engaged himſelf to make the river Iberus the boundary of his conqueſts. This treaty probably was never ratified by the ſenate of Carthage; nor, though it had, would it have been regarded by Hannibal, who ſucceeded Aſdrubal in the command, and had ſworn perpetual enmity with the Romans. The tranſactions of the ſecond Punic war are perhaps the moſt remarkable which the hiſtory of the world can afford. Certain it is, that nothing can ſhow more clearly the ſlight foundations upon which the greateſt empires are built. We now ſee the Romans, the nation moſt remarkable for their military ſkill in the whole world, and who, for more than 500 years, had been conſtantly victorious, unable to reſiſt the efforts of one ſingle man. At the ſame time we ſee this man, though evidently the firſt general in the world, loſt ſolely for want of a ſlight ſupport. In former times, the republic of Carthage ſupplied her generals in Sicily with hundreds of thouſands, though their enterprizes were almoſt conſtantly unſucceſsful; but now Hannibal, the conqueror of Italy, was obliged to abandon his deſign, merely for want of 20 or 30,000 men. That degeneracy and infatuation, which never fails to overwhelm a falling nation, or rather which is the cauſe of its fall, had now infected the councils of Carthage, and the ſupplies were denied. Neither was Carthage the only infatuated nation at this time. Hannibal, whoſe prudence never forſook him either in proſperity or adverſity, in the height of his good fortune had concluded an alliance with Philip king of Macedon. Had that prince ſent an army to the aſſiſtance of the Carthaginians in Italy immediately after the battle of Cannæ, there can be no doubt but the Romans would have been forced to accept of that peace which they ſo haughtily refuſed †; and indeed, this offer of peace, in the midſt of ſo much ſucceſs, is an inſtance of moderation which perhaps does more honour to the Carthaginian general than all the military exploits he performed. Philip, however, could not be rouſed from his indolence, nor ſee that his own ruin was connected with that of Carthage. The Romans had now made themſelves maſters of Sicily: after which they recalled Marcellus, with his victorious army, to be employed againſt Hannibal; and the conſequence at laſt was, that the Carthaginian armies, unſupported in Italy, could not conquer it, but were recalled into Africa, which the Romans had invaded. The ſouthern nations ſeem to have been as blind to their own intereſt as the northern ones. They ought to have ſeen, that it was neceſſary for them to preſerve Carthage from being deſtroyed; but, inſtead of this, Maſiniſſa king of Numidia allied with the Romans, and by his means Hannibal was overcome at the battle of Zama *, which finiſhed the ſecond Punic war, in 188 B. C.

28
Of Egypt and Syria.

The event of the ſecond Punic war determined the fate of almoſt all the other nations in the world. All this time, indeed, the empires of Egypt, Syria, and Greece, had been promoting their own ruin by mutual wars and inteſtine diviſions. The Syrian empire was now governed by Antiochus the Great, who ſeems to have had little right to ſuch a title. His empire, though diminiſhed by the defection of the Parthians, was ſtill very powerful; and to him Hannibal applied, after he was obliged to leave his country, as related under CARTHAGE, nº 152. Antiochus, however, had not ſufficient judgment to ſee the neceſſity of following that great man's advice; nor would the Carthaginians be prevailed upon to contribute their aſſiſtance againſt the nation which was ſoon to deſtroy them without any provocation. The pretence for war on the part of the Romans was, that Antiochus would not declare his Greek ſubjects in Aſia to be free and independent ſtates; a requiſition which neither the Romans nor any other nation had a right to make. The event of all was that Antiochus was every where defeated, and forced to conclude a peace upon very diſadvantageous terms.

29
Of Greece.

In Europe, matters went on in the ſame way; the ſtates of Greece, weary of the tyranny of the Macedonians, entered into a reſolution of recovering their liberties. For this purpoſe was framed the Achæan League †; but as they could not agree among themſelves, they at laſt came to the imprudent determination of calling in the Romans to defend them againſt Philip king of Macedon. This produced a war, in which the Romans were victorious. The Macedonians, however, were ſtill formidable; and, as the intention of the Romans to enſlave the whole world could no longer be doubted, Perſeus, the ſucceſſor of Philip, renewed the war. Through his own cowardice he loſt a deciſive engagement, and with it his kingdom, which ſubmitted to the Romans in 167 B. C.

30
Deſtruction of Carthage and Corinth.

Macedon being thus conquered, the next ſtep was utterly to exterminate the Carthaginians; whoſe republic, notwithſtanding the many diſaſters that had befallen it, was ſtill formidable. It is true, the Carthaginians were giving no offence; nay, they even made the moſt abject ſubmiſſions to the republic of Rome; but all was not ſufficient. War was declared a third time againſt that unfortunate ſtate; there was now no Hannibal to command their armies, and the city was utterly deſtroyed 146 B. C. The ſame year the Romans put an end to the liberties they had pretended to grant the cities of Greece, by the entire deſtruction of CORINTH. See that article.

31
Hiſtory of Egypt, Syria, and Judæa.

After the death of Antiochus the Great, the affairs of Syria and Egypt went on from bad to worſe. The degenerate princes which filled the thrones of thoſe empires, regarding only their own pleaſures, either ſpent their time in oppreſſing their ſubjects, or in attempting to deprive each other of their dominions, by which means they became a more eaſy prey to the Romans. So far indeed were they from taking any means to ſecure themſelves againſt the overgrown power of that repblic, that the kings both of Syria and Egypt ſometimes applied to the Romans as protectors. Their downfal, however, did not happen within the period of which we now treat.—The only other tranſaction which makes any conſiderable figure in the Syrian empire is the oppreſſion of the Jews by Antiochus Epiphanes. After their return from the Babyloniſh captivity, they continued in ſubjection to the Perſians till the time of Alexander. From that time they were ſubject to the kings of Egypt or Syria, as the fortune of either happened to prevail. Egypt being reduced to a low ebb by Antiochus Epiphanes, the Jews fell under his dominion; and being ſeverely treated by him, imprudently ſhowed ſome ſigns of joy on a report of his death. This brought him againſt them with a powerful army; and in 170 B. C. he took Jeruſalem by ſtorm, committing the moſt horrid cruelties on the inhabitants, inſomuch that they were obliged to hide themſelves in caverns and in holes of rocks to avoid his fury. Their religion was totally aboliſhed, their temple profaned, an image of Jupiter Olympius ſet up on the altar of burnt-offerings: which profanation is thought to be the *abomination of deſolation* mentioned by the prophet Daniel. This revolution, however, was of no long continuance. In 167 B. C. Mattathias reſtored the true worſhip in moſt of the cities of Judea; and in 165 the temple was purified, and the worſhip there reſtored by Judas Maccabæus. This was followed by a long ſeries of wars between the Syrians and Jews, in which the latter were almoſt always victorious; and before theſe wars were finiſhed, the deſtruction of Carthage happened, which puts an end to the ſixth general period formerly mentioned.

32
Seventh period. General ſtate of the world.

7. The beginning of the ſeventh period preſents us with a view of the ruins of the Greek empire in the declining ſtates of Syria and Egypt; both of them much circumſcribed in bounds. The empire of Syria at firſt comprehended all Aſia to the river Indus, and beyond it; but in 312 B. C. moſt of the Indian provinces were by Seleucus ceded to one *Sandrocottus*, or *Androcottus*, a native, who in return gave him 500 elephants. Of the empire of Sandrocottus we know nothing farther than that he ſubdued all the countries between the Indus and the Ganges; ſo that from this time we may reckon the greateſt part of India independent on the Syro-Macedonian princes. In 250 B. C. however, the empire ſuſtained a much greater

† See *Carthage*, nº 125.

* See *Zama*.

† See *Greece*

loſs by the revolt of the Parthians and Bactrians from Antiochus Theus. The former could not be ſubdued; and as they held in ſubjection to them the vaſt tract which now goes under the name of *Perſia*, we muſt look upon their defection as an irreparable loſs. Whether any part of their country was afterwards recovered by the kings of Egypt or Syria, is not very certain; nor is it of conſequence, ſince we are aſſured that in the beginning of the ſeventh period, i. e. 146 B. C. the Greek empires of Syria and Egypt were reduced by the loſs of India, Perſia, Armenia, Pontus, Bithynia, Capadocia, Pergamus, &c. The general ſtate of the world in 146 B. C. therefore was as follows. In Aſia were the empires of India, Parthia, and Syria, with the leſſer ſtates of Armenia, Pontus, &c. abovementioned; to which we muſt add that of Arabia, which during the ſixth period had grown into ſome conſequence, and had maintained its independency from the days of Iſhmael the ſon of Abraham. In Africa were the kingdoms of Egypt and Ethiopia; the Carthaginian territories, now ſubject to the Romans; and the kingdoms of Numidia, Mauritania, and Getulia, ready to be ſwallowed up by the ſame ambitious and inſatiable power, now that Carthage was deſtroyed, which ſerved as a barrier againſt it. To the ſouth lay ſome unknown and barbarous nations, ſecure by reaſon of their ſituation and inſignificance, rather than their ſtrength, or diſtance from Rome. In Europe we find none to oppoſe the progreſs of the Roman arms, except the Gauls Germans, and ſome Spaniſh nations. Theſe were brave indeed; but through want of military ſkill, incapable of contending with ſuch maſters in the art of war as the Romans then were.

33
Conqueſts of the Romans.

The Spaniards had indeed been ſubdued by Scipio Africanus in the time of the ſecond Punic war: but in 115 B. C. they revolted; and, under the conduct of one Viriathus, formerly a robber, held out for a long time againſt all the armies the Romans could ſend into Spain. Him the Conſul Cæpio cauſed to be murdered about 138 B C. becauſe he found it impoſſible to reduce him by force. The city of Numantia defied the whole Roman power for ſix years longer; till at laſt, by dint of treachery, numbers, and perſeverance, it was not taken, but the inhabitants, reduced to extremity by famine, ſet fire to their houſes and periſhed in the flames, or killed one another, ſo that not one remained to grace the triumph of the conqueror; and this for the preſent quieted the reſt of the Spaniards. About the ſame time Attalus king of Pergamus, left by will the Roman people heirs to all his goods; upon which they immediately ſeized on his kingdom as part of thoſe goods, and reduced it to a Roman province, under the name of *Aſia Proper*. Thus they continued to enlarge their dominions on every ſide, without the leaſt regard to juſtice, to the means they employed, or to the miſeries they brought upon the conquered people. In 122 B. C. The Balearic iſlands, now called *Majorca*, *Minorca*, and *Ivica*, were ſubdued, and the inhabitants exterminated; and, ſoon after, ſeveral of the nations beyond the Alps were obliged to ſubmit.

In Africa the crimes of Jugurtha ſoon gave this ambitious republic an opportunity of conquering the kingdoms of Numidia and Mauritania: and indeed this is almoſt the only war in which we find the Romans engaged where their pretenſions had the leaſt colour of juſtice; though in no caſe whatever could a nation ſhow more degeneracy than the Romans did on this occaſion. The particulars of this war are related under the articles NUMIDIA and ROME. The event of it was the total reduction of the former about the year 105 B. C. but Mauritania and Getulia preſerved their liberty for ſome time longer.

In the eaſt, the empire of Syria continued daily to decline; by which means the Jews not only had an opportunity of recovering their liberty, but even of becoming as powerful, or at leaſt of extending their dominions as far, as in the days of David and Solomon. This declining empire was ſtill farther reduced by the civil diſſenſions between the two brothers Antiochus Grypus and Antiochus Cyzicenus; during which the cities of Tyre, Sidon, Ptolemais, and Gaza, declared themſelves independent, and in other cities tyrants ſtarted up who refuſed allegiance to any foreign power. This happened about 100 B. C.; and 17 years after, the whole was reduced by Tigranes king of Armenia. On his defeat by the Romans, the latter reduced Syria to a province of their empire. The kingdom of Armenia itſelf, with thoſe of Pontus, Cappadocia, and Bithynia, ſoon ſhared the ſame fate; Pontus the moſt powerful of them all, being ſubdued about 64 B. C. The kingdom of Judea alſo was reduced under the ſame power much about this time. This ſtate owed the loſs of its liberty to the ſame cauſe that had ruined ſeveral others, namely, calling in the Romans as arbitrators between two contending parties. The two ſons of Alexander Jannæus (Hyrcanus and Ariſtobulus) contended for the kingdom. Ariſtobulus, being defeated by the party of Hircanus, applied to the Romans. Pompey the Great, who acted as ultimate judge in this affair decided it againſt Ariſtobulus, but at the ſame time deprived Hyrcanus of all power as a king; not allowing him even to aſſume the regal title, or to extend his territory beyond the ancient borders of Judea. To ſuch length did Pompey carry this laſt article, that he obliged him to give up all thoſe cities in Cœloſyria and Phœnicia which had been gained by his predeceſſors, and added them to the newly acquired Roman province of Syria.

Thus the Romans became maſters of all the eaſtern parts of the world from the Mediterrannean ſea to the borders of Parthia. In the weſt, however, the Gauls were ſtill at liberty, and the Spaniſh nations bore the Roman yoke with great impatience. The Gauls infeſted the territories of the republic by their frequent incurſions, which were ſometimes very terrible; and tho' ſeveral attempts had been made to ſubdue them, they always proved inſufficient till the time of Julius Cæſar. By him they were totally reduced, from the river Rhine to the Pyrenæan mountains and many of their nations almoſt exterminated. He carried his arms alſo into Germany and the ſouthern parts of Britain; but in neither of theſe parts did he make any permanent conqueſts. The civil wars between him and Pompey gave him an opportunity of ſeizing on the kingdom of Mauritania and thoſe parts of Numidia which had been allowed to retain their liberty. The kingdom of Egypt alone remained, and to this nothing belonged except the country properly ſo called. Cyrenaica was bequeathed by will to the Romans about 58 B. C.; and about the ſame time the iſland of Cyprus was ſeized by them without any pretence, except a deſire of poſſeſſing the treaſure of the king.—The kingdom of Egypt continued for ſome time longer at liberty; which in ſome meaſure muſt be aſcribed to the internal diſſentions of the republic, but more eſpecially to the amours of Pompey, Julius Cæſar, and Marc Antony, with the famous Cleopatra queen of Egypt. The battle of Actium, however, determined the fate of Antony, Cleopatra, and Egypt itſelf; which laſt was reduced to a Roman province about 9 B. C.

34
Origin and progreſs of the civil wars in Rome.

While the Romans thus employed all means to reduce the world to their obedience, they were making one another feel the ſame miſeries at home which they inflicted upon other nations abroad. The firſt civil diſſentions took their riſe at the ſiege of Numantia in Spain. We have already obſerved, that this ſmall city reſiſted the whole power of the Romans for ſix years. Once they gave them a moſt terrible and ſhameful defeat, wherein 30,000 Romans fled before 4000 Numantines. Twenty thouſand were killed in the battle, and the remaining ten thouſand ſo ſhut up, that there was no poſſibility of eſcaping. In this extremity they were obliged to negociate with the enemy, and a peace was concluded upon the following terms: 1. That the Numantines ſhould ſuffer the Romans to retire unmoleſted; and, 2. That Numantia ſhould maintain its independence, and be reckoned among the Roman allies.—The Roman ſenate, with an injuſtice and ingratitude hardly to be matched, broke this treaty, and in return ordered the commander of their army to be delivered up to the Numantines: but they refuſed to accept of him, unleſs his army was delivered along with him; upon which the war was renewed, and ended as already related. The fate of Numantia, however, was ſoon revenged. Tiberius Sempronius Gracchus, brother-in-law to Scipio Africanus the ſecond, had been a chief promoter of the peace with the Numantines already mentioned, and of conſequence had been in danger of being delivered up to them along with the commander in chief. This diſgrace he never forgot; and, in order to revenge himſelf, undertook the cauſe of the Plebeians againſt the Patricians, by whom the former were greatly oppreſſed. He began with reviving an old law, which had enacted that no Roman citizen ſhould poſſeſs more than 500 acres of land. The overplus he deſigned to diſtribute among thoſe who had no lands, and to reimburſe the rich out of the public treaſury. This law met with great oppoſition, bred many tumults, and at laſt ended in the death of Gracchus and the perſecution of his friends, ſeveral hundreds of whom were put to cruel deaths without any form of law.

The diſturbances did not ceaſe with the death of Gracchus. New conteſts enſued on account of the Sempronian law, and the giving to the Italian allies the privilege of Roman citizens. This laſt not only produced great commotions in the city but occaſioned a general revolt of the ſtates of Italy againſt the republic of Rome. This rebellion was not quelled without the utmoſt difficulty: and in the mean time, the city was deluged with blood by the contending factions of Sylla and Marius; the former of whom ſided with the patricians, and the latter with the plebeians. Theſe diſturbances ended in the perpetual dictatorſhip of Sylla, about 80 B. C.

From this time we may date the loſs of the Roman liberty; for though Sylla reſigned his dictatorſhip two years after, the ſucceeding conteſts between Cæſar and Pompey proved equally fatal to the republic. Theſe conteſts were decided by the battle of Pharſalia, by which Cæſar became in effect maſter of the empire in 43 B. C. Without loſs of time he then croſſed over into Africa; totally defeated the republican army in that continent; and, by reducing the country of Mauritania to a Roman province, completed the Roman conqueſts in theſe parts. His victory over the ſons of Pompey at Munda 40 B. C. ſecured him from any further apprehenſions of a rival. Being therefore ſole maſter of the Roman empire, and having all the power of it at his command, he projected the greateſt ſchemes; tending, according to ſome, not leſs to the happineſs than to the glory of his country: when he was aſſaſſinated in the ſenate-houſe, in the 56th year of his age, and 39 B. C.

Without inveſtigating the political juſtice of this action, or the motives of the perpetrators, it is impoſſible not to regret the death of this great man, when we contemplate his virtues, and the deſigns which he is ſaid to have formed: (See Rome). Nor is it poſſible to juſtify, from ingratitude at leaſt, even the moſt virtuous of the conſpirators, when we conſider the obligations under which they lay to him. And as to the meaſure itſelf, even in the view of expediency, it ſeems to be generally condemned. In fact, from the tranſactions which had long preceded, as well as thoſe which immediately followed, the murder of Cæſar, it is evident, that Rome was incapable of preſerving its liberty any longer, and that the people had become unfit for being free. The efforts of Brutus and Caſſius were therefore unſucceſsful, and ended in their own deſtruction and that of great numbers of their followers in the battle of Philippi. The defeat of the republicans was followed by numberleſs diſturbances, murders, proſcriptions, &c. till at laſt Octavianus, having cut off all who had the courage to oppoſe him, and finally got the better of his rivals by the victory at Actium, put an end to the republic in the year 27. B. C.

35
Octavianus puts an end to the republic.

The deſtruction of the Roman commonwealth proved advantageous to the few nations of the world who ſtill retained their liberty. That outrageous deſire of conqueſt, which had ſo long marked the Roman character, now in a great meaſure ceaſed; becauſe there was now another way of ſatisfying the deſires of ambitious men, namely, by courting the favour of the emperor. After the final reduction of the Spaniards, therefore, and the conqueſt of the countries of Mæſia, Pannonia, and ſome others adjacent to the Roman territories, and which in a manner ſeemed naturally to belong to them, the empire enjoyed for ſome time a profound peace.

The only remarkable tranſactions which took place during the remainder of the period of which we treat, were the conqueſt of Britain by Claudius and Agricola, and the deſtruction of Jeruſalem by Veſpaſian and Titus. The war with the Jews began A. D. 67; and was occaſioned by their obſtinately claiming the city of Cæſarea, which the Romans had added to the province of Syria. It ended in 73, with the moſt terrible deſtruction of their city and nation; ſince which time they have never been able to aſſemble as a diſtinct people. The ſouthern parts of Britain were totally ſubdued by Agricola about ten years after.

In the 98th year of the Chriſtian era, Trajan was created emperor of Rome; and being a man of great valour and experience in war, carried the Roman conqueſts to their utmoſt extent. Having conquered the Dacians, a German nation beyond the Danube, and who had of late been very troubleſome, he turned his arms eaſtward; reduced all Meſopotamia, Chaldæa, Aſſyria; and having taken Cteſiphon, the capital of the Parthian empire, appointed them a king, which he thought would be a proper method of keeping that warlike people in ſubjection. After this, he propoſed to return to Italy, but died by the way; and with his reign the ſeventh general period above mentioned is concluded.

36
Eighth period. General ſtate of the world.

8. The beginning of the eighth period preſents us with a view of one vaſt empire, in which almoſt all the nations of the world were ſwallowed up. This empire comprehended the beſt part of Britain, all Spain, France, the Netherlands, Italy, part of Germany, Egypt, Barbary Bildulgerid, Turkey in Europe, Turkey in Aſia, and Perſia. The ſtate of India at this time is unknown. The Chineſe lived in a remote part of the world, unheard and unmoleſted by the weſtern nations who ſtruggled for the empire of the world. The northern parts of Europe and Aſia were filled with barbarous nations, already formidable to the Romans, and who were ſoon to become more ſo. The vaſt empire of the Romans, however, had no ſooner attained its utmoſt degree of power, than like others before it, it began to decline. The provinces of Babylonia, Meſopotamia, and Aſſyria, almoſt inſtantly revolted, and were abandoned by Adrian the ſucceſſor of Trajan in the empire. The Parthians having recovered their liberty, continued to be very formidable enemies, and the barbarians of the northern parts of Europe continued to increaſe in ſtrength; while the Romans, weakened by inteſtine diviſions, became daily leſs able to reſiſt them. At different times, however, ſome warlike emperors aroſe, who put a ſtop to the incurſions of theſe barbarians; and about the year 215, the Parthian empire was totally overthrown by the Perſians, who had long been ſubject to them. This revolution proved of little advantage to the Romans. The Perſians were enemies ſtill more troubleſome than the Parthians had been; and though often defeated, they ſtill continued to infeſt the empire on the eaſt, as the barbarous nations of Europe did on the north. In 260, the defeat and captivity of the emperor Valerian by the Perſians, with the diſturbances which followed, threatened the empire with utter deſtruction. Thirty tyrants ſeized the government at once, and the barbarians pouring in on all ſides in prodigious numbers ravaged almoſt all the provinces of the empire. By the vigorous conduct of Claudius, Aurelian, Tacitus, Probus, and Carus, the empire was reſtored to its former luſtre; but as the barbarians were only repulſed, and never thoroughly ſubdued, this proved only a temporary relief. What was worſe, the Roman ſoldiers, grown impatient of reſtraint, commonly murdered thoſe emperors who attempted to revive among them the ancient military diſcipline which alone could enſure the victory over their enemies. Under Diocleſian, the diſorders were ſo great, that though the government was held by two perſons, they found themſelves unable to bear the weight of it, and therefore took other two partners in the empire. Thus was the Roman empire divided into four parts; which by all hiſtorians is ſaid to have been productive of the greateſt miſchiefs. As each of the four ſovereigns would have as many officers both civil and military, and the ſame number of forces that had been maintained by the ſtate when governed only by one emperor, the people were not able to pay the ſums neceſſary for ſupporting them. Hence the taxes and impoſts were increaſed beyond meaſure, the inhabitants in ſeveral provinces reduced to beggary, the land left untilled for want of hands, &c. An end was put to theſe evils when the empire was again united under Conſtantine the Great; but in 330 a mortal blow was given to it by removing the imperial ſeat to Byzantium, now Conſtantinople, and making it equal to Rome. The introduction and eſtabliſhment of Chriſtianity, already corrupted with the groſſeſt ſuperſtitions, proved alſo a moſt grievous detriment to the empire. Inſtead of that ferocious and obſtinate valour in which the Romans had ſo long been accuſtomed to put their truſt, they now imagined themſeves ſecured by ſigns of the croſs, and other external ſymbols of the Chriſtian religion. Theſe they uſed as a kind of magical incantations, which undoubtedly proved at all times ineffectual; and hence alſo in ſome meaſure proceeded the great revolution which took place in the next period.

37
Ninth period. Deſtruction of the weſtern empire.

9. The ninth general period ſhows us the decline and miſerable end of the weſtern part of the Roman empire. We ſee that mighty empire, which formerly occupied almoſt the whole world, now weakened by diviſion, and ſurrounded by enemies. On the eaſt, the Perſians; on the north, the Scythians, Sarmatians, Goths, and a multitude of other barbarous nations, watched all occaſions to break into it; and miſcarried in their attempts, rather through their own barbarity, than the ſtrength of their enemies. The devaſtations committed by thoſe barbarians when they made their incurſions are incredible, and the relation ſhocking to human nature. Some authors ſeem much inclined to favour them; and even inſinuate, that barbarity and ignorant ferocity were their chief if not their only faults: but from their hiſtory it plainly appears, that not only barbarity and the moſt ſhocking cruelty, but the higheſt degrees of avarice, perfidy, and diſregard to the moſt ſolemn promiſes, were to be numbered among their vices. It was ever a ſufficient reaſon for them to make an attack, that they thought their enemies could not reſiſt them. Their only reaſon for making peace, or for keeping it, was becauſe their enemies were too ſtrong; and their only reaſon for committing the moſt horrid maſſacres, rapes, and all manner of crimes, was becauſe they had gained a victory. The Romans, degenerate as they were, are yet to be eſteemed much better than theſe ſavages; and therefore we find not a ſingle province of the empire that would ſubmit to the barbarians while the Romans could poſſibly defend them.

Some of the Roman emperors indeed withſtood this inundation of ſavages; but as the latter grew daily more numerous, and the Romans continued to weaken themſelves by their inteſtine diviſions, they were at laſt obliged to take large bodies of barbarians into their pay, and teach them their military diſcipline, in order to drive away their countrymen, or others who invaded the empire. This at laſt proved its total deſtruction; for, in 476, the barbarians who ſerved in the Roman armies, and were dignified with the title of *allies*, demanded the third part of the lands of Italy as a reward for their ſervices; but meeting with a refuſal, they revolted, and made themſelves maſters of the whole country, and of Rome itſelf, which from that time ceaſed to be the head of an empire of any conſequence.

38
General ſtate of the world.

This period exhibits a moſt unfavourable view of the weſtern parts of the world: The Romans, from the height of grandeur, ſunk to the loweſt ſlavery, nay, in all probability, almoſt exterminated; the provinces they formerly governed, inhabited by human beings ſcarce a degree above the brutes: every art and ſcience loſt; and the ſavage conquerors even in danger of ſtarving for want of a ſufficient knowledge of agriculture, having now no means of ſupplying themſelves by plunder and robbery as before. Britain had long been abandoned to the mercy of the Scots and Picts; and in 450 the inhabitants had called in the Saxons to their aſſiſtance, whom they ſoon found worſe enemies than thoſe againſt whom they had implored their aid. Spain was held by the Goths and Suevians; Africa (that is, Barbary and Bildulgerid), by the Vandals; the Burgundians, Goths, Franks, and Alans, had erected, ſeveral ſmall ſtates in Gaul; and Italy was ſubjected to the Heruli under Odoacer, who had taken upon him the title of *king of Italy*. In the eaſt, indeed, matters wore an aſpect ſomewhat more agreeable. The Roman empire continued to live in that of Conſtantinople, which was ſtill very extenſive. It comprehended all Aſia Minor and Syria, as far as Perſia; in Africa, the kingdom of Egypt; and Greece in Europe. The Perſians were powerful, and rivalled the emperors of Conſtantinople; and beyond them lay the Indians, Chineſe, and other nations, who, unheard of by the inhabitants of the more weſtern parts, enjoyed peace and liberty.

The Conſtantinoplitan empire continued to decline by reaſon of its continual wars with the Perſians, Bulgarians, and other barbarous nations; to which alſo ſuperſtition and relaxation of military diſcipline largely contributed. The Perſian empire alſo declined from the ſame cauſes, together with the inteſtine broils from which it was ſeldom free more than that of Conſtantinople. The hiſtory of the eaſtern part of the world during this period, therefore, conſiſts only of the wars between theſe two great empires, of which an accunt is given under the articles CONSTANTINOPLE and PERSIA, and which were productive of no other conſequence than that of weakening them both, and maing them a more eaſy prey to thoſe enemies who were now as it were in embryo, but ſhortly about to erect an empire almoſt as extenſive as that of the Greeks or Romans.

39
Hiſtory of Italy.

Among the weſtern nations, the revolutions, as might naturally be expected from the character of the people, ſucceeded one another with rapidity. The Heruli under Odoacer were driven out by the Goths under Theodoric. The Goths were expelled by the Romans; and, while the two parties were contending, both were attacked by the Franks, who carried off an immenſe booty. The Romans were in their turn expelled by the Goths: the Franks again invaded Italy, and made themſelves maſters of the province of Venetia; but at laſt the ſuperior fortune of the emperor of Conſtantinople prevailed, and the Goths were finally ſubdued in 553. Narſes, the conqueror of the Goths, governed Italy as a province of the eaſtern empire till the year 568, when Longinus his ſucceſſor made conſiderable alterations. The Italian provinces had ever ſince the time of Conſtantine the Great been governed by *conſulares*, *correctores*, and *præſides*; no alteration having been either made by the Roman emperors or the Gothic kings. But Longinus, being inveſted with abſolute power by Juſtinian, ſuppreſſed thoſe magiſtrates; and, inſtead of them, placed in each city of note a governor, whom he diſtinguiſhed with the title of *duke*. The city of Rome was not more honoured than any other: for Longinus, having aboliſhed the very name of *ſenate* and *conſuls*, appointed a *duke* of Rome as well as of other cities. To himſelf he aſſumed the title of *exarch*; and, reſiding at Ravenna, his government was ſtyled the *Exarchate of Ravenna*. But while he was eſtabliſhing this new empire, the greateſt part of Italy was conquered by the Lombards.

40
Of France.

In France a conſiderable revolution alſo took place. In 487, Clovis, the founder of the preſent French monarchy, poſſeſſed himſelf of all the countries lying between the Rhine and the Loire. By force or treachery, he conquered all the petty kingdoms which had been erected in that country. His dominions had been divided, reunited, and divided again; and were on the point of being united a ſecond time, when the great impoſtor Mahomet began to make figure, in the world.

41
Of Spain.

In Spain, the Viſigoths erected a kingdom ten years before the conqueſt of Rome by the Heruli. This kingdom they had extended eaſtward, about the ſame time that Clovis was extending his conqueſts to the weſt: ſo that the two kingdoms met at the river Loire. The conſequence of this approach of ſuch barbarous conquerors towards each other was an immediate war. Clovis proved victorious, and ſubdued great part of the country of the Viſigoths, which put a final ſtop to their conqueſts on that ſide.

Another kingdom had been founded in the weſtern parts of Spain by the Suevi, a conſiderable time before the Romans were finally expelled from that country. In 409 this kingdom was entirely ſubverted by Theodoric king of the Goths; and the Suevi were ſo pent up in a ſmall diſtrict of Luſitania and Galicia, that it ſeemed impoſſible for them to recover themſelves. During the abovementioned period, however, while the attention of the Goths was turned another way, they had found means again to erect themſelves into an independent ſtate, and to become maſters of conſiderably extended territories. But this ſucceſs proved of ſhort duration. In 584 the Goths attacked them; totally deſtroyed their empire a ſecond time; and thus became maſters of all Spain, except ſome ſmall part which ſtill owned ſubjection to the emperors of Conſtantinople. Of this part, however, the Goths became maſters alſo in the year 623; which concludes the 9th general period.

42
Of Africa.

Africa, properly ſo called, had changed its maſters three times during this period. The Vandals had expelled the Romans, and erected an independent kingdom, which was at laſt overturned by the emperors of Conſtantinople; and from them the greateſt part of it was taken by the Goths in 620.

43
Tenth general period. Conqueſts of the Saracens.

10. At the commencement of the tenth general period (which begins with the flight of Mahomet in the year 622, from whence his followers date their era called the *Hegira*), we ſee every thing prepared for the great revolution which was now to take place: the Roman empire in the weſt annihilated; the Perſian empire and that of Conſtantinople weakened by their mutual wars and inteſtine diviſions; the Indians and other eaſtern nations unaccuſtomed to war, and ready to fall a prey to the firſt invader; the ſouthern parts of Europe in a diſtracted and barbarous ſtate; while the inhabitants of Arabia, from their earlieſt origin, accuſtomed to war and plunder, and now united by the moſt violent ſuperſtition and enthuſiaſtic deſire of conqueſt, were like a flood pent up, and ready to overwhelm the reſt of the world.—The northern nations of Europe and Aſia, however formidable in aftertimes, were at preſent unknown and peaceable, at leaſt with reſpect to their ſouthern neighbours; ſo that there was in no quarter of the globe any power capable of oppoſing the conqueſts of the Arabs. With amazing celerity, therefore, they over-ran all Syria, Paleſtine, Perſia, Bukharia, and India, extending their conqueſts farther to the eaſtward than ever Alexander had done. On the weſt ſide, their empire extended over Egypt, Barbary, and Spain, together with the iſlands of Sicily, Sardinia, Majorca, Minorca, &c. and many of the Archipelago iſlands; nor were the coaſts of Italy itſelf free from their incurſions; nay, they are even ſaid to have reached the diſtant and barren country of Iceland. At laſt this great empire, as well as others, began to decline. Its ruin was very ſudden, and owing to its internal diviſions. Mahomet had not taken care to eſtabliſh the apoſtleſhip in his family, or to give any particular directions about a ſucceſſor. The conſquence of this was, that the caliphat, or ſucceſſion to the apoſtleſhip, was ſeized by many uſurpers in different parts of the empire; while the true caliphs, who reſided at Bagdad, gradually loſt all power, and were regarded only as a kind of high prieſts. Of theſe diviſions the Turks took advantage to eſtabliſh their authority in many provinces of the Mohammedan empire: but as they embraced the ſame religion with the Arabs, and were filled with the ſame enthuſiaſtic deſire of conqueſt, it is of little conſequence to diſtinguiſh between them; as indeed it ſignified little to the world in general whether the Turks or Saracens were the conquerors, ſince both were cruel, barbarous, ignorant, and ſuperſtitious.

44
Of the Pope's temporal power.

While the barbarians of the eaſt were thus graſping at the empire of the whole world, great diſturbances happened among the no leſs barbarous nations of the weſt. Superſtition ſeems to have been the ruling motive in both caſes. The Saracens and Turks conquered for the glory of God, or of his apoſtle Mahomet and his ſucceſſors; the weſtern nations profeſſed an equal regard for the divine glory, but which was only to be perceived in the reſpect they paid to the pope and clergy. Ever ſince the eſtabliſhment of Chriſtianity by Conſtantine, the biſhops of Rome had been gradually extending their power, and attempting not only to render themſelves independent, but even to aſſume an authority over the emperors themſelves. The deſtruction of the empire was ſo far from weakening their power, that it afforded them opportunities of greatly extending it, and becoming judges of the ſovereigns of Italy themſelves, whoſe barbarity and ignorance prompted them to ſubmit to their deciſions. All this time, however, they themſelves had been in ſubjection to the emperors of Conſtantinople; but on the decline of that empire, they found means to get themſelves exempted from this ſubjection. The principal authority in the city of Rome was then engroſſed by the biſhop; though of right it belonged to the duke appointed by the exarch of Ravenna. But tho' they had now little to fear from the eaſtern emperors, they were in great danger from the ambition of the Lombards, who aimed at the conqueſt of all Italy. This aſpiring people the biſhops of Rome determined to check; and therefore, in 726, when Luitprand king of the Lombards had taken Ravenna and expelled the exarch, the pope undertook to reſtore him. For this purpoſe he applied to the Venetians, who are now firſt mentioned in hiſtory as a ſtate of any conſequence; and by their means the exarch was reſtored. Some time before, a quarrel had happened between the pope (Gregory II.) and Leo emperor of the eaſt, about the worſhip of images. Leo, who it ſeems, in the midſt of ſo much barbariſm, had ſtill preſerved ſome ſhare of common ſenſe and reaſon, reprobated the worſhip of images in the ſtrongeſt terms, and commanded them to be deſtroyed throughout his dominions. The pope, whoſe cauſe was favoured by the moſt abſurd ſuperſtitions, and by theſe only, refuſed to obey the emperor's commands. The exarch of Ravenna, as a ſubject of the emperor, was ordered to force the pope to a compliance, and even to ſeize or aſſaſſinate him in caſe of a refuſal. This excited the pious zeal of Luitprand to aſſiſt the pope, whom he had formerly deſigned to ſubdue: the exarch was firſt excommunicated, and then torn in pieces by the enraged multitude: the duke of Naples ſhared the ſame fate; and a vaſt number of the *Iconoclaſts*, or Image-breakers, as they were called, were ſlaughtered without mercy; and to complete all, the ſubjects of the exarchate, at the inſtigation of the pope, renounced their allegiance to the emperor.

Leo was no ſooner informed of this revolt than he ordered a powerful army to be raiſed, in order to reduce the rebels, and take vengeance on the pope. Alarmed at theſe warlike preparations, Gregory looked round for ſome power on which he might depend for protection. The Lombards were poſſeſſed of ſufficient force, but they were too near and too dangerous neighbours to be truſted; the Venetians, though zealous Catholics, were as yet unable to withſtand the force of the empire; Spain was over-run by the Saracens: the French ſeemed, therefore, the only people to whom it was adviſable to apply for aid; as they were able to oppoſe the emperor, and were likewiſe enemies to his edict. Charles Martel, who at that time governed France as mayor of the palace, was therefore applied to; but before a treaty could be concluded, all the parties concerned were removed by death. Conſtantine Copronymus, who ſucceeded Leo at Conſtantinople, not only perſiſted in the oppoſition to image-worſhip, begun by his predeceſſor, but prohibited alſo the invocation of ſaints. Zachary, who ſucceeded Gregory III. in the pontificate, proved as zealous an adverſary as his predeceſſors. Pepin, who ſucceeded Charles Martel in the ſovereignty of France, proved as powerful a friend to the pope as his father had been. The people of Rome had nothing to fear from Conſtantinople; and therefore drove out all the emperor's officers. The Lombards, awed by the power of France, for ſome time allowed the pope to govern in peace the dominions of the exarchate; but in 752, Aſtolphus king of Lombardy not only reduced the greateſt part of the pope's territories, but threatened the city of Rome itſelf. Upon this an application was made to Pepin, who obliged Aſtolphus to reſtore the places he had taken, and gave them to the Pope, or, as he ſaid, to St. Peter. The Greek emperor, to whom they of right belonged, remonſtrated to no purpoſe. The pope from that time became poſſeſſed of conſiderable territories in Italy; which, from the manner of their donation, go under the name of *St Peter's Patrimony*. It was not, however, before the year 774 that the pope was fully ſecured in theſe new dominions. This was accompliſhed when the kingdom of the Lombards was totally deſtroyed by Charlemagne, who was thereupon crowned king of Italy. Soon after, this monarch made himſelf maſter of all the Low-Countries, Germany, and part of Hungary; and in the year 800, was ſolemnly crowned emperor of the weſt by the pope.

45
General ſtate of the world.

Thus was the world once more ſhared among three great empires. The empire of the Arabs or Saracens extended from the river Ganges to Spain; comprehending almoſt all of Aſia and Africa which has ever been known to Europeans, the kingdoms of China and Japan excepted. The eaſtern Roman empire was reduced to Greece, Aſia Minor, and the provinces adjoining to Italy. The empire of the weſt under Charlemagne, comprehended France, Germany, and the greateſt part of Italy. The Saxons, however, as yet poſſeſſed Britain unmoleſted by external enemies, tho' the ſeven kingdoms erected by them were engaged in perpetual conteſts. The Venetians alſo enjoyed a nominal liberty; though it is probable that their ſituation would render them very much dependent on the great powers which ſurrounded them. Of all nations on earth, the Scots and Picts, and the remote ones of China and Japan ſeem to have enjoyed, from their ſituation, the greateſt ſhare of liberty; unleſs, perhaps, we except the Scandinavians, who under the names of *Danes* and *Normans*, were ſoon to infeſt their ſouthern neighbours. But of all the European potentates, the popes certainly exerciſed the greateſt authority; ſince even Charlemagne himſelf ſubmitted to accept the crown from their hands, and his ſucceſſors made them the arbiters of their differences.

Matters, however, did not long continue in this ſtate. The empire of Charlemagne was on the death of his ſon Lewis divided among his three children. Endleſs diſputes and wars enſued among them, till at laſt the ſovereign power was ſeized by Hugh Capet in 987. The Saxon heptarchy was diſſolved in 827, and the whole kingdom of England reduced under one head. The Danes and Normans began to make depredations and infeſt the neighbouring ſtates. The former conquered the Engliſh Saxons, and ſeized the government, but were in their turn expelled by the Normans in 1066. In Germany and Italy the greateſt diſturbances aroſe from the conteſts between the popes and the emperors. To all this if we add the internal conteſts which happened through the ambition of the powerful barons of every kingdom we can ſcarce form an idea of times more calamitous than thoſe of which we now treat. All Europe, nay, all the world, was one great field of battle; for the empire of the Mahometans was not in a more ſettled ſtate than that of the Europeans. Caliphs, ſultans, emirs, &c. waged continual war with each other in every quarter; new ſovereignties every day ſprung up, and were as quickly deſtroyed. In ſhort, through the ignorance and barbarity with which the whole world was overſpread, it ſeemed in a manner impoſſible that the human race could long continue to exiſt; when happily the cruſades, by directing the attention of the Europeans to one particular object, made them in ſome meaſure ſuſpend their ſlaughters of one another.

46
Eleventh period.
The cruſades.

II. The cruſades originated from the ſuperſtition of the two grand parties into which the world was at that time divided, namely, the Chriſtians and Mahometans. Both looked upon the ſmall territory of Paleſtine which they called the *Holy Land*, to be an invaluable acquiſition, for which no ſum of money could be an equivalent; and both took the moſt unjuſtifiable methods to accompliſh their deſires. The ſuperſtition of Omar the ſecond caliph had prompted him to invade this country, part of the territories of the Greek emperor, who was doing him no hurt; and now when it had been ſo long under the ſubjection of the Mahometans, a ſimilar ſuperſtition prompted the pope to ſend an army for the recovery of it. The cruſaders accordingly poured forth in multitudes, like thoſe with which the kings of Perſia formerly invaded Greece; and their fate was pretty ſimilar. Their impetuous valour at firſt, indeed, carried every thing before them: they recovered all Paleſtine, Phœnicia, and part of Syria, from the infidels; but their want of conduct ſoon loſt what their valour had obtained, and very few of that vaſt multitude which had left Europe ever returned to their native countries. A ſecond, a third, and ſeveral other cruſades, were preached, and were attended with a like ſucceſs, in both reſpects: vaſt numbers took the croſs, and repaired to the Holy Land; which they polluted by the moſt abominal maſſacres and treacheries, and from which very few of them returned. In the third cruſade Richard I. of England was embarked, who ſeems to have been the beſt general that ever went into the eaſt; but even his valour and ſkill were not ſufficient to repair the faults of his companions; and he was obliged to return even after he had entirely defeated his antagoniſts, and was within ſight of Jeruſalem.

47
Conqueſts of the Maguts.

But while the Chriſtians and Mahometans were thus ſuperſtitiouſly contending for a ſmall territory in the weſtern parts of Aſia, the nations in the more eaſterly parts were threatened with total extermination. Jenghiz Khan, the greateſt as well as the moſt bloody conqueror that ever exiſted, now makes his appearance. The rapidity of his conqueſts ſeemed to emulate thoſe of Alexander the Great; and the cruelties he committed were altogether unparalleled. It is worth obſerving, that Jenghiz Khan and all his followers were neither Chriſtians nor Mahometans, but ſtrict deiſts. For a long time even the ſovereign had not heard of a temple, or any particular place on earth appropriated by the deity to himſelf, and treated the notion with ridicule when it was firſt mentioned to him.

The Moguls, over whom Jenghiz Khan aſſumed the ſovereignty, were a people of Eaſt Tartary, divided into a great number of petty governments as they are at this day, but who owned a ſubjection to one ſovereign, whom they called *Vang-khan*, or the Great Khan. Temujin, afterwards *Jengiz-Khan*, was one of theſe petty princes; but unjuſtly deprived of the greateſt part of his inheritance at the age of 13, which he could not recover till he arrived at that of 40. This correſponds with the year 1201, when he totally reduced the rebels; and as a ſpecimen of his lenity cauſed 70 of their chiefs to be thrown into as many caldrons of boiling water. In 1202, he defeated and killed Vang-khan himſelf (known to the Europeans by the name of *Preſter John of Aſia*); and poſſeſſing himſelf of his vaſt dominions, became from thenceforward altogether irreſiſtible. In 1206, having ſtill continued to enlarge his dominions, he was declared khan of the Moguls and Tartars; and took upon him the title of *Jenghiz Khan* or *The moſt Great Khan of khans*. This was followed by the reduction of the kingdom of Hya in China, Tangut, Kitay, Turkeſtan, Karazm, (the kingdom of Gazna founded by Mahmud Gazni), Great Bukharia, Perſia, and part of India; and all theſe vaſt regions were reduced in 26 years. The devaſtations and ſlaughters with which they were accompanied were unparalleled, no fewer than 14,470,000 perſons been computed to have been maſſacred by Jenghiz Khan during the laſt 22 years of his reign. In the beginning of 1227 he died, thereby freeing the world from a moſt bloody tyrant. His ſucceſſors completed the conqueſt of China and Korea; but were foiled in their attempts on Cochin-china, Tong-king, and Japan. On the weſtern ſide the Tartar dominions were not much enlarged till the time of Hulaku, who conquering Media, Babylonia, Meſapotamia, Aſſyria, Syria, Georgia, Armenia, and almoſt all Aſia Minor; putting an end to the empire of the Saracens by the taking of Bagdad in 1258.

The empire of Jenghiz Khan had the fate of all others. Being far too extenſive to be governed by one head, it ſplit into a multitude of ſmall kingdoms, as it had been before his time. All theſe princes, however, owned allegiance to the family of Jenghiz Khan till the time of Timur Bek, or Tamerlane. The Turks, in the mean time, urged forward by the inundation of Tartars who poured in from the eaſt, were forced upon the remains of the Greek empire; and at the time of Tamerlane abovementioned, they had almoſt confined this once mighty empire within the walls of Conſtantinople.

48
Of Tamerlane.

In the year 1335, the family of Jenghiz Khan becoming extinct in Perſia, a long civil war enſued; during which Timur Bek, one of the petty princes among whom the Tartar dominions were divided, found means to aggrandize himſelf in a manner ſimilar to what Jenghiz Khan had done about 150 years before. Jenghiz Khan, indeed, was the model whom he propoſed to imitate; but it muſt be allowed that Timur was more merciful than Jenghiz Khan, if indeed the word can be applied to ſuch inhuman tyrants. The plan on which Jenghiz Khan conducted his expeditions was that of total extermination. For ſome time he utterly extirpated the inhabitants of thoſe places which he conquered, deſigning to people them anew with his Moguls; and in conſequence of this reſolution, he would employ his army in beheading 100,000 priſoners at once. Timur's cruelty, on the other hand, ſeldom went farther than the pounding of 3000 or 4000 people in large mortars, or building them among bricks and mortar into a wall. We muſt obſerve, however, that Timur was not a deiſt, but a Mahometan, and conquered expreſsly for the purpoſe of ſpreading the Mahometan religion; for the Moguls had now adopted all the ſuperſtitions and abſurdities of Mahomet. Thus was all the eaſtern quarter of the world threatened anew with the moſt dreadful devaſtations, while the weſtern nations were exhauſting themſelves in fruitleſs attempts to regain the Holy Land. The Turks were the only people who ſeem at this period to have been gathering ſtrength, and by their perpetual encroachments threatened to ſwallow up the weſtern nations as the Tartars had done the eaſtern ones.

In 1362, Timur invaded Bukharia, which he reduced in five years. He proceeded in his conqueſts, though not with the ſame celerity as Jenghiz Khan, till the year 1387, when he had ſubdued all Perſia, Armenia, Georgia, Karazm, and great part of Tartary. After this he proceeded weſtward, ſubduing all the countries to the Euphrates; made himſelf maſter of Bagdad; and even entered Ruſſia, where he pillaged the city of Moſcow. From thence he turned his arms to the eaſt, and totally ſubdued India. In 1393, he invaded and reduced Syria; and having turned his arms againſt the Turks, forced their ſultan Bajazet to raiſe the ſiege of Conſtantinople. This brought on an engagement, in which Bajazet was entirely defeated and taken priſoner; which broke the power of the Turks to ſuch a degree, that they were not for ſome time able to recover themſelves. At laſt this great conqueror died in the year 1405, while on his way to conquer China, as Jenghiz Khan had done before him.

49
State of the world ſince that time.

The death of Timur was followed almoſt immediately by the diſſolution of his empire. Moſt of the nations he had conquered recovered their liberty. The Turks had now no further obſtacle to their conqueſt of Conſtantinople. The weſtern nations having exhauſted themſelves in the *holy wars*, as they were called, had loſt that inſatiable thirſt after conqueſt which for ſo long time poſſeſſed the minds of men. They had already made conſiderable advances in civilization, and began to ſtudy the arts of peace. Gunpowder was invented, and its application to the purpoſes of war already known; and though no invention threatened to be more deſtructive, perhaps none was ever more beneficial to the human race. By the uſe of fire-arms, nations are put more on a level with each other than formerly they were; war is reduced to a regular ſyſtem, which may be ſtudied with as much ſucceſs as any other ſcience. Conqueſts are not now to be made with the ſame eaſe as formerly; and hence the laſt ages of the world have been much more quiet and peaceable than the former ones. In 1453, the conqueſt of Conſtantinople by the Turks fixed that wandering people to one place: and though now they poſſeſs very large regions both in Europe, Aſia, and Africa, an effectual ſtop hath long been put to their further progreſs.

About this time, alſo, learning began to revive in Europe, where it had been long loſt; and the invention of PRINTING, which happened about the ſame time, rendered it in a manner impoſſible for barbariſm ever to take place in ſuch a degree as formerly. All nations of the world, indeed, ſeem now at once to have laid aſide much of their former ferocity: and, though wars have by no means been uncommon, they have not been carried on with ſuch circumſtances of fury and ſavage cruelty as before. Inſtead of attempting to enrich themſelves by plunder, and the ſpoils of their neighbours, mankind in general have applied themſelves to commerce, the only true and durable ſource of riches. This ſoon produced improvements in navigation; and theſe improvements led to the diſcovery of many regions formerly unknown. At the ſame time, the European powers, being at laſt thoroughly ſenſible that extenſive conqueſts could never be permanent, applied themſelves more to provide for the ſecurity of thoſe dominions which they already poſſeſſed than to attempt the conqueſt of one another: and this produced the policy to which ſo much attention was lately paid, namely, the *preſerving of the balance of Europe*, that is preventing any one of the nations from acquiring ſufficient ſtrength to overpower another.

In the end of the 15th century, the vaſt continent of America was diſcovered; and, almoſt at the ſame time, the paſſage to the Eaſt-Indies by the Cape of Good Hope. The diſcovery of theſe rich countries gave a new turn to the ambition of the Europeans. To enrich themſelves, either by the gold and ſilver produced in theſe countries, or by traffic with the natives, now became the object. The Portugueſe had the advantage of being the firſt diſcoverers of the eaſtern, and the Spaniards of the weſtern countries. The former did not neglect ſo favourable an opportunity of enriching themſelves by commerce. Many ſettlements were formed by them in the Eaſt-India iſlands, and on the continent: but their avarice and perfidious behaviour towards the natives proved at laſt the cauſe of their total expulſion The Spaniards enriched themſelves by the vaſt quantities of the precious metals imported from America, which were not obtained but by the moſt horrid maſſacres committed on the natives, and of which an account is given under the different names of the American countries. Theſe poſſeſſions of the Spaniards and Portugueſe ſoon excited other European nations to make attempts to ſhare with them in their treaſures, by planting colonies in different parts of America, and making ſettlements in the Eaſt Indies; and thus has the rage of war in ſome meaſure been transferred from Europe to theſe diſtant regions: and, after various conteſts, the Britiſh at laſt obtained a great ſuperiority in the Eaſt Indies, and in America previous to the late revolution.

In Europe the only conſiderable revolutions which happened during this period, were, The total expulſion of the Moors and Saracens from Spain, by the taking of Grenada in 1491; the union of the kingdoms of Arragon and Caſtile, by the marriage of Ferdinand and Iſabella; and the revolt of the ſtates of Holland from the Spaniards. After much contention and bloodſhed, theſe laſt obtained their liberty, and were declared a free people in 1609: ſince which time they have continued an independent and very conſiderable nation of Europe.

In Aſia nothing of importance hath happened ſince the taking of Conſtantinople by the Turks. That continent is now divided among the following nations. The moſt northerly part, called *Siberia*, extending to the very extremity of the continent, is under the power of Ruſſia. To the ſouthward, from Aſia Minor to China and Korea, are the Tartars, formidable indeed from their numbers, but, by reaſon of their barbarity and want of union, incapable of attempting any thing. The Turks poſſeſs the weſtern part of the continent called *Aſia Minor*, to the river Euphrates. The Arabs are again confined within their own peninſula; which they poſſeſs, as they have ever done, without owning ſubjection to any foreign power. To the eaſt of Turkey in Aſia lies Perſia, now more confined in its limits than before; and to the eaſtward of Perſia lies India, or the kingdom late of the Mogul, comprehending all the country from the Indus to the Ganges, and beyond that river. Still farther to the eaſt lie the kingdoms of Siam, Pegu, Thibet, and Cochin-China, little known to the Europeans. The vaſt empire of China occupies the moſt eaſterly part of the continent; while that of Japan comprehends the iſlands which go by that name, and which are ſuppoſed to lie at no great diſtance from the weſtern coaſts of America.

In Africa the Turks poſſeſs Egypt, which they conquered in 1517, and have a nominal juriſdiction over the ſtates of Barbary. The interior parts are filled with barbarous and unknown nations, as they have always been. On the weſtern coaſts are many ſettlements of the European nations, particularly the Britiſh and Portugueſe; and the ſouthern extremity is poſſeſſed by the Dutch. The eaſtern coaſts are almoſt totally unknown. The Aſiatic and African iſlands are either poſſeſſed by the Europeans, or inhabited by ſavage nations.

The European nations at the beginning of the 17th century were, Sweden, Muſcovy, Denmark, Poland, Britain, Germany, Holland, France, Spain, Portugal, Italy, and Turkey in Europe. Of theſe the Ruſſians, though the moſt barbarous, were by far the moſt conſiderable, both in regard to numbers and the extent of their empire; but their ſituation made them little feared by the others, who lay at a diſtance from them. The kingdom of Poland, which was firſt ſet up in the year 1000, proved a barrier betwixt Ruſſia and Germany; and at the ſame time the policy abovementioned, of keeping up the balance of power in Europe, rendered it probable that no one European nation, whatever wars it might be engaged in, would have been totally deſtroyed, or ceaſed to exiſt as a diſtinct kingdom. The late diſmemberment of Poland, however, or its partition between the three powers, Ruſſia, Hungary, and Pruſſia, was a ſtep very inconſiſtent with the above political ſyſtem; and it is ſurpriſing with what tameneſs it was acquieſced in by the other powers. Subſequent circumſtances particularly the paſſiveneſs with which the ambitious deſigns of Ruſſia againſt the Porte have been ſo long beheld, ſeem to indicate a total dereliction of that ſcheme of equilibrium, formerly ſo wiſely, though perhaps ſometimes too anxiouſly, attended to.

The revolution of the Britiſh colonies in America, it was ſuppoſed by the enemies of Britain, would have given a fatal ſhock to her ſtrength and wonted ſuperiority. The conſequences, however, have been very different. Thoſe colonies, it is true, have been disjoined from the mother country, and have attained an independent rank among the nations. But Britain has had no cauſe to repine at the ſeparation. Diveſted only of a ſplendid encumbrance, an expenſive and invidious appanage, ſhe has been left to enjoy the undivided benefits of her native vigour, and to diſplay new energies, which promiſe her mild empire a long and proſperous duration. On the other hand, the flame which was to have blazed only to *her* prejudice, has brought confuſion on her chief foe; and the ambition and tyranny of that branch of the houſe of Bourbon which has been long the peſt of Europe, now lie humbled in the duſt. The French, indeed, have thus become a nation of freemen as well as the Americans and the Britiſh; who, by the way, were never otherwiſe, nor ever knew what oppreſſion was except in inflicting it upon their African brethren. But neither is the French revolution an event which Britons, as lovers of liberty and friends to the rights of mankind, ſhould regret; or which, even in a political view, if duly conſidered, ought to excite either their jealouſy or apprehenſion. In fine, we ſeem to be advancing to a great era in the hiſtory of human affairs. The emancipation of France, it is not to be doubted, will in time be followed by that of Spain, and other countries of Europe. The papal power, too, that ſcourge of nations, is declining; and the period ſeems to be approaching when the Roman pontiff will be reduced to his original and ſimple title of *biſhop of Rome* More liberal ideas both in politics and religion are every where gaining ground. The regulation, and perhaps in time the abolition, of the ſlave-trade, with the endeavours of the ſocieties for diſcovering Africa, may lead to the civilization of ſome parts of that immenſe continent and open new markets for manufactures. Finally, the Americans having eſtabliſhed a ſettled government, have already become a great commercial people.

SECT. II. *Eccleſiaſtical Hiſtory.*

50 Revolutions in religion ſeldom happen.

THE hiſtory of religion, among all the different nations that have exiſted in the world, is a ſubject no leſs important and intereſting than that of civil hiſtory. It is, however, leſs fertile of great events, affords an account of fewer revolutions, and is much more uniform than civil hiſtory. The reaſon of this is plain. Religion is converſant about things which cannot be ſeen; and which of conſequence cannot ſuddenly and ſtrongly affect the ſenſes of mankind, as natural things are apt to do. The expectation of worldly riches can eaſily induce one nation to attack another; but it is not eaſy to find any thing which will induce a nation to change its religion: The inviſible nature of ſpiritual things, the prejudice of habit and of early education, all ſtand in the way of changes of this kind. Hence the revolutions in religion have been but few, and the duration of almoſt any religion of longer ſtanding than the moſt celebrated empires, the changes which have happened, in general have required a long time to bring them about, and hiſtory ſcarce affords an inſtance of the religion of any nation being eſſentially and ſuddenly changed for another.

With regard to the origin of religion, we muſt have recourſe to the Scriptures; and are as neceſſarily conſtrained to adopt the account there given, as we are to adopt that of the creation given in the ſame book; namely, becauſe no other hath made its appearance which ſeems in any degree rational, or conſiſtent with itſelf.—In what manner the true religion given to Adam was falſified or corrupted by his deſcendants before the flood, doth not clearly appear from Scripture. Idolatry is not mentioned; nevertheleſs we are aſſured that the inhabitants of the world were then exceedingly wicked: and as their wickedneſs did not conſiſt in worſhipping falſe gods, it may be concluded that they worſhipped none at all; i. e. that the crime of the antediluvians was deiſm or atheiſm.

51 Origin of idolatry.

After the flood, idolatry quickly made its appearance: but what gave riſe to it is not certainly known. This ſuperſtition indeed ſeems to be natural to man, eſpecially when placed in ſuch a ſituation that he hath little opportunity of inſtruction, or of improving his rational faculties. This ſeems alſo probable from a caution given to the Jews, leſt, when they looked up to the ſun, moon, and ſtars, and the reſt of the hoſt of heaven, they ſhould be *driven to worſhip them.* The origin of idolatry among the Syrians and Arabians, and alſo in Greece, is therefore accounted for with great probability in the following manner by the author of The Ruins of Balbeck. "In thoſe uncomfortable deſarts, where the day preſents nothing to the view but the uniform, tedious, and melancholy proſpect of barren ſands, the night diſcloſes a moſt delightful and magnificent ſpectacle, and appears arrayed with charms of the moſt attractive kind. For the moſt part unclouded and ſerene, it exhibits to the wondering eye the hoſt of heaven in all their variety and glory. In the view of this ſtupendous ſcene, the tranſition from admiration to idolatry was too eaſy to uninſtructed minds; and a people whoſe climate offered no beauties to contemplate but thoſe of the firmament, would naturally look thither for the objects of their worſhip. The form of idolatry in Greece was different from that of the Syrians; which perhaps may be attributed to that ſmiling and variegated ſcene of mountains, valleys, rivers, woods, groves, and fountains, which the tranſported imagination, in the midſt of its pleaſing aſtoniſhment, ſuppoſed to be the ſeats of inviſible deities."

A difficulty, howevever, ariſes on this ſuppoſition; for if idolatry is naturally produced in the mind of uninſtructed and ſavage man from a view of the creation, why hath not idolatry of ſome kind or other taken place among all the different nations of the world? This certainly hath not been the caſe; of which the moſt ſtriking examples are the Perſians of old, and the Moguls in more modern times. Both theſe nations were ſtrict deiſts: ſo that we muſt allow ſome other cauſes to concur in producing idolatry beſides theſe already mentioned; and of theſe cauſes an imperfect and obſcure notion of the true religion ſeems to be the moſt probable.

52
General account of the Heathen ſuperſtitions.

Though idolatry, therefore, was formerly very prevalent, it neither extended over the whole earth, nor were the ſuperſtitions of the idolaters all of one kind. Every nation had its reſpective gods, over which one more excellent than the reſt was ſaid to preſide; yet in ſuch a manner, that this ſupreme deity himſelf was controuled by the rigid empire of the fates, or by what philoſophers called *eternal neceſſity*. The gods of the eaſt were different from thoſe of the Gauls, the Germans, and the other northern nations. The Grecian divinities differed widely from thoſe of the Egyptians, who deified plants, animals, and a great variety of the productions both of nature and art. Each people alſo had their own particular manner of worſhipping and appeaſing their reſpective deities, entirely different from the ſacred rites of other countries. All this variety of religions, however, produced neither wars nor diſſenſions among the different nations; each nation ſuffered its neighbours to follow their own method of worſhip, without diſcovering any diſpleaſure on that account. There is nothing ſurpriſing in this mutual toleration, when we conſider, that they all looked upon the world as one great empire, divided into various provinces, over each of which a certain order of divinities preſided; for which reaſon they imagined that none could behold with contempt the gods of other nations, or force ſtrangers to pay homage to theirs.—The Romans exerciſed this toleration in the moſt ample manner; for though they would not allow any change to be made in the religions that were publicly profeſſed in the empire, nor any new form of worſhip to be openly introduced, yet they granted to their citizens a full liberty of obſerving in private the ſacred rites of other nations, and of honouring foreign deities as they thought proper.

The heathen deities were honoured with rites and ſacrifices of various kinds, according to their reſpective natures and offices. Their rites were abſurd and ridiculous; while the prieſts, appointed to preſide over this ſtrange worſhip, abuſed their authority, by deceiving and impoſing upon the people in the groſſeſt manner.

53
State of religion at the appearance of Chriſt.

From the time of the flood to the coming of Chriſt, idolatry prevailed among almoſt all the nations of the world, the Jews alone excepted; and even they were on all occaſions ready to run into it, as is evident from their Hiſtory in the Old Teſtament. At the time of Chriſt's appearance, the religion of the Romans, as well as their empire, extended over a great part of the world. Some people there were among the heathens who perceived the abſurdities of that ſyſtem; but being deſtitute of means, as well as of abilities, to effect a reformation, matters went on in their old way. Though there were at that time various ſects of philoſophers, yet all of them proceeded upon falſe principles, and conſequently could be of no ſervice to the advancement or reformation of religion. Nay, ſome, among whom were the Epicureans and Academics, declared openly againſt every kind of religion whatever.

Two religions at this time flouriſhed in Paleſtine, viz. The Jewiſh and Samaritan; between whoſe reſpective followers reigned the moſt violent hatred and contempt. The difference between them ſeems to have been chiefly about the place of worſhip; which the Jews would have to be in Jeruſalem, and the Samaritans on mount Gerizzim. But though the Jews were certainly right as to this point, they had greatly corrupted their religion in other reſpects. They expected a Saviour indeed, but they miſtook his character; imagining that he was to be a powerful and warlike prince, who ſhould ſet them free from the Roman yoke, which they bore with the utmoſt impatience. They alſo imagined that the whole of religion conſiſted in obſerving the rites of Moſes, and ſome others which they had added to them, without the leaſt regard to what is commonly called *morality* or *virtue*; as is evident from the many charges our Saviour brings againſt the Phariſees, who had the greateſt reputation for ſanctity among the whole nation. To theſe corrupt and vicious principles they added ſeveral abſurd and ſuperſtitious notions concerning the divine nature, inviſible powers, magic, &c. which they had partly imbibed during the Babylonian captivity, and partly derived from their neighbours in Arabia, Syria, and Egypt. The principal ſects among them were the ESSENES or Eſſenians, PHARISEES, and SADDUCEES. The Samaritans, according to the moſt general opinion, had corrupted their religion ſtill more than the Jews.

When the true religion was preached by the Saviour of mankind, it is not to be wondered at if he became on that account obnoxious to a people ſo deeply ſunk in corruption and ignorance as the Jews then were. It is not here requiſite to enter into the particulars of the doctrine advanced by him, or of the oppoſition he met with from the Jews; as a full account of theſe things, and likewiſe of the preaching of the goſpel by the Apoſtles, may be found in the New Teſtament.—The rapid progreſs of the Chriſtian religion, under theſe faithful and inſpired miniſters, ſoon alarmed the Jews, and raiſed various perſecutions againſt its followers. The Jews, indeed, ſeem at firſt to have been every where the chief promoters of perſecution; for we find that they officiouſly went from place to place, wherever they heard of the increaſe of the goſpel, and by their calumnies and falſe ſuggeſtions endeavoured to excite the people againſt the Apoſtles. The Heathens, however, though at firſt they ſhowed no very violent ſpirit of perſecution againſt the Chriſtians, ſoon came to hate them as much as the Jews themſelves. Tacitus acquaints us with the cauſes of this hatred, when ſpeaking of the firſt general perſecution under Nero. That inhuman emperor having, as was ſuppoſed, ſet fire to the city of Rome, to avoid the imputation of this wickedneſs, transferred it on the Chriſtians. Our author informs us that they were already abhorred on account of their many and enormous crimes. "The author of this name (*Chriſtians*)," ſays he, "was CHRIST, who in the reign of Tiberius, was executed under Pontius Pilate, procurator of Judæa. The

Tacitus's account of the firſt perſecution by Nero.

peſtilent ſuperſtition was for a while ſuppreſſed : but it revived again, and ſpread, not only over Judæa, where this evil was firſt broached, but reached Rome, whither from every quarter of the earth is conſtantly flowing whatever is hideous and abominable amongſt men, and is there readily embraced and practiſed. Firſt, therefore, were apprehended ſuch as openly avowed themſelves to be of that ſect ; then by them were diſcovered an immenſe multitude ; and all were convicted, not of the crime of burning Rome, but of hatred and enmity to mankind. Their death and tortures were aggravated by cruel deriſion and ſport ; for they were either covered with the ſkins of wild beaſts and torn in pieces by devouring dogs, or faſtened to croſſes, or wrapped up in combuſtible garments, that, when the day-light failed, they might, like torches, ſerve to diſpel the darkneſs of the night. Hence, towards the miſerable ſufferers, however guilty and deſerving the moſt exemplary puniſhment, compaſſion aroſe ; ſeeing they were doomed to periſh, not with a view to the public good, but to gratify the cruelty of one man."

That this account of Tacitus is downright miſrepreſentation and calumny, muſt be evident to every one who reads it. It is impoſſible that any perſon can be convicted of hatred and enmity to mankind, without ſpecifying a number of facts by which this hatred ſhewed itſelf. The burning of Rome would indeed have been a very plain indication of enmity to mankind ; but of this Tacitus himſelf clears them, and mentions no other crime of which they were guilty. It is probable, therefore, that the only reaſon of this charge againſt the Chriſtians, was their abſolute refuſal to have any ſhare in the Roman worſhip, or to countenance the abſurd ſuperſtitions of Paganiſm in any degree.

55 Second perſecution.

The perſecution under Nero was ſucceeded by another under Domitian ; during which the Apoſtle John was baniſhed to Patmos, where he ſaw the viſions, and wrote the book called his *Revelations*, which completes the canon of Scripture. This perſecution commenced in the 95th year of the Chriſtian era ; and John is ſuppoſed to have written his Revelation in the year after, or in the following one.

During the firſt century, the Chriſtian religion ſpread over a great number of different countries ; but as we have now no authentic records concerning the travels of the Apoſtles, or the ſucceſs which attended them in their miniſtry, it was impoſſible to determine how far the goſpel was carried during this period. We are, however, aſſured, that even during this early period many corruptions were creeping in, the progreſs of which was with difficulty prevented even by the apoſtles themſelves. Some corrupted their profeſſion by a mixture of Judaiſm, others by mixing it with the oriental philoſophy ; while others were already attempting to deprive their brethren of liberty, ſetting themſelves up as eminent paſtors, in oppoſition even to the apoſtles, as we learn from the epiſtles of St Paul, and the third epiſtle of St John. Hence aroſe the ſects of the Gnoſtics, Cerinthians, Nicolaitans, Nazarenes, Ebionites, &c. with which the church was troubled during this century.

Concerning the ceremonies and method of worſhip uſed by the Chriſtians of the firſt century, it is impoſſible to ſay any thing with certainty. Neither is the church order, government, and diſcipline, during this period, aſcertained with any degree of exactneſs. Each of thoſe parties, therefore, which exiſt at this day, contends with the greateſt earneſtneſs for that particular mode of worſhip which they themſelves have adopted ; and ſome of the moſt bigoted would willingly monopolize the word *church* in ſuch a manner as to exclude from all hope of ſalvation every one who is not attached to their particular party. It doth not however appear that, excepting baptiſm, the Lord's ſupper, and anointing the ſick with oil, any external ceremonies or ſymbols were properly of divine appointment. According to Dr Moſheim, "there are ſeveral circumſtances which incline us to think, that the friends and apoſtles of our bleſſed Lord either tolerated through neceſſity, or appointed for wiſe reaſons, many other external rites in various places. At the ſame time, we are not to imagine, that they ever conferred upon any perſon a perpetual, indelible, pontifical authority, or that they enjoined the ſame rites in all churches. We learn, on the contrary, from authentic records, that the Chriſtian worſhip was from the beginning celebrated in a different manner in different places ; and that, no doubt, by the orders, or at leaſt with the approbation, of the apoſtles and their diſciples. In thoſe early times, it was both wiſe and neceſſary to ſhew, in the eſtabliſhment of outward forms of worſhip, ſome indulgence to the ancient opinions, manners, and laws, of the reſpective nations to whom the goſpel was preached."

56 Hiſtory of the ſecond century.

The ſecond century commences with the third year of the emperor Trajan. The Chriſtians were ſtill perſecuted ; but as the Roman emperors were for the moſt part of this century princes of a mild and moderate turn, they perſecuted leſs violently than formerly. Marcus Aurelius, notwithſtanding the clemency and philoſophy for which he is ſo much celebrated, treated the Chriſtians worſe than Trajan, Adrian, or even Severus himſelf did, who was noted for his cruelty. This reſpite from rigorous perſecution proved a very favourable circumſtance for the ſpreading of the Chriſtian religion ; yet it is by no means eaſy to point out the particular countries through which it was diffuſed. We are, however, aſſured, that in the ſecond century, Chriſt was worſhipped as God almoſt through the whole eaſt ; as alſo among the Germans, Spaniards, Celtes, and many other nations : but which of them received the goſpel in the firſt century, and which in the ſecond, is a queſtion unanſwerable at this diſtance of time. The writers of this century attribute the rapid progreſs of Chriſtianity chiefly to the extraordinary gifts that were imparted to the firſt Chriſtians, and the miracles which were wrought at their command ; without ſuppoſing that any part of the ſucceſs ought to be aſcribed to the intervention of human means, or ſecondary cauſes. Many of the moderns, however, are ſo far from being of this opinion, that they are willing either to deny the authenticity of all miracles ſaid to have been wrought ſince the days of the apoſtles or to aſcribe them to the power of the devil. To enter into the particulars of this controverſy is foreign to our preſent purpoſe ; for which reaſon we muſt refer to the writers of polemic divinity, who have largely treated of this and other points of a ſimilar nature.

57 Ceremonies multiplied.

The corruptions which had been introduced in the firſt century, and which were almoſt coeval with Chriſtianity itſelf, continued to gain ground in the ſecond. Ceremonies, in themſelves futile and uſeleſs, but which muſt be conſidered as highly pernicious when joined to a religion incapable of any other ornament than the upright and virtuous conduct of its profeſſors, were multiplied for no other purpoſe than to pleaſe the ignorant multitude. The immediate conſequence of this was, that the attention of Chriſtians was drawn aſide from the important duties of morality; and they were led to imagine, that a careful obſervance of the ceremonies might make amends for the neglect of moral duties. This was the moſt pernicious opinion that could poſſibly be entertained; and was indeed the very foundation of that enormous ſyſtem of eccleſiaſtical power which afterwards took place, and held the whole world in ſlavery and barbariſm for many ages.

58 Myſteries introduced.

Another miſchief was the introduction of *myſteries*, as they were called, into the Chriſtian religion; that is, inſinuating that ſome parts of the worſhip in common uſe had a hidden efficacy and power far ſuperior to the plain and obvious meaning aſſigned to them by the vulgar: and by paying peculiar reſpect to theſe myſteries, the pretended teachers of the religion of Jeſus accommodated their doctrines to the taſte of their heathen neighbours, whoſe religion conſiſted in a heap of myſteries, of which nobody knew the meaning.

59 The teachers aſſume a power over the people.

By theſe, and other means of a ſimilar kind, the Chriſtian paſtors greatly abridged the liberty of their flocks. Being maſters of the ceremonies and myſteries of the Chriſtian religion, they had it in their power to make their followers worſhip and believe whatever they thought proper; and this they did not fail to make uſe of for their own advantage. They perſuaded the people, that the miniſters of the Chriſtian church ſucceeded to the character, rights, and privileges of the Jewiſh prieſthood; and accordingly the biſhops conſidered themſelves as inveſted with a rank and character ſimilar to thoſe of the high-prieſt among the Jews, while the preſbyters repreſented the prieſts, and the deacons the Levites. This notion, which was firſt introduced in the reign of Adrian, proved a ſource of very conſiderable honour and profit to the clergy.

60 Form of church government.

The form of eccleſiaſtical government was in this century rendered permanent and uniform. One inſpector or biſhop preſided over each Chriſtian aſſembly, to which office he was elected by the voices of the whole people. To aſſiſt him in his office, he formed a council of preſbyters, which was not confined to any ſtated number. To the biſhops and preſbyters the miniſters or *deacons* were ſubject; and the latter were divided into a variety of claſſes, as the different exigencies of the church required. During a great part of this century, the churches were independent of each other; nor were they joined together by aſſociation, confederacy, or any other bonds but thoſe of charity. Each aſſembly was a little ſtate governed by its own laws; which were either enacted, or at leaſt approved of, by the ſociety. But in proceſs of time all the Chriſtian churches of a province were formed into one large eccleſiaſtical body, which, like confederate ſtates, aſſembled at certain times, in order to deliberate about the common intereſts of the whole. This inſtitution had its origin among the Greeks; but in a ſhort time it became univerſal, and ſimilar aſſemblies were formed in all places where the goſpel had been planted. Theſe aſſemblies, which conſiſted of the deputies or commiſſioners from ſeveral churches, were called *ſynods* by the Greeks, and *councils* by the Latins; and the laws enacted in theſe general meetings were called *canons*, i. e. *rules*.

61 Changes produced by the inſtitution of councils.

Theſe councils, of which we find not the ſmalleſt trace before the middle of this century, changed the whole face of the church, and gave it a new form; for by them the ancient privileges of the people were conſiderably diminiſhed, and the power and authority of the biſhops greatly augmented. The humility, indeed, and prudence, of theſe pious prelates hindered them from aſſuming all at once the power with which they were afterwards inveſted. At their firſt appearance in theſe general councils, they acknowledged that they were no more than the delegates of their reſpective churches, and that they acted in the name and by the appointment of their people. But they ſoon changed this humble tone; imperceptibly extended the limits of their authority; turned their influence into dominion, their counſels into laws; and at length openly aſſerted, that Chriſt had empowered them to preſcribe to his people *authoritative rules* of *faith* and *manners*. Another effect of theſe councils was the gradual abolition of that perfect equality which reigned among all biſhops in the primitive times: for the order and decency of theſe aſſemblies required, that ſome one of the provincial biſhops met in council ſhould be inveſted with a ſuperior degree of power and authority; and hence the rights of metropolitans derive their origin. In the mean time the bounds of the church were enlarged; the cuſtom of holding councils was followed wherever the ſound of the goſpel had reached; and the univerſal church had now the appearance of one vaſt republic formed by a combination of a great number of little ſtates. This occaſioned the creation of a new order of eccleſiaſtics, who were appointed in different parts of the world as heads of the church, and whoſe office it was to preſerve the conſiſtence and union of that immenſe body, whoſe members were ſo widely diſperſed throughout the nations. Such was the nature and office of the *Patriarchs*; among whom, at length, ambition, being arrived at its moſt inſolent period, formed a new dignity, inveſting the biſhop of Rome with the title and authority of the *prince of the Patriarchs*.

62 Account of the Aſcetics.

During the ſecond century, all the ſects continued which had ſprung up in the firſt, with the addition of ſeveral others; the moſt remarkable of which were the *Aſcetics*. Theſe owed their riſe to an error propagated by ſome doctors of the church, who aſſerted that Chriſt had eſtabliſhed *a double rule of ſanctity and virtue* for two different orders of Chriſtians. Of theſe rules, one was ordinary, the other extraordinary; the one of a lower dignity, the other more ſublime: the firſt for perſons in the active ſcenes of life; the other for thoſe who, in a ſacred retreat, aſpired after the glory of a celeſtial ſtate. In conſequence of this ſyſtem, they divided into two parts all thoſe moral doctrines and inſtructions which they had received either by writing or tradition. One of theſe diviſions they called *precepts*, and the other *counſels*. They gave the name of *precepts* to thoſe laws that were univerſally obligatory upon all orders of men; and that of *counſels* to thoſe which related to Chriſtians of a more ſublime rank, who propoſed to themſelves great and glorious ends, and breathed after an intimate communion with the Supreme Being.—Thus were produced all at once a new ſet of men, who made pretenſions to uncommon ſanctity and virtue, and declared their reſolution of obeying all the *precepts* and *counſels* of Chriſt, in order to their enjoyment of communion with God here, and alſo that, after the diſſolution of their mortal bodies, they might aſcend to him with the greater facility, and find nothing to retard their approach to the centre of happineſs and perfection. They looked upon themſelves as prohibited from the uſe of things which it was lawful for other Chriſtians to enjoy; ſuch as wine, fleſh, matrimony, and commerce. They thought it their indiſpenſable duty to extenuate their body by watchings, abſtinence, labour, and hunger. They looked for felicity in ſolitary retreats, and deſart places; where by ſevere and aſſiduous efforts of ſublime meditation, they raiſed the ſoul above all external objects, and all ſenſual pleaſures. They were diſtinguiſhed from other Chriſtians, not only by their title of *Aſcetics*, Σπȣδαιοι, Εκλεκτοι, and philoſophers, but alſo by their garb. In this century, indeed, thoſe who embraced ſuch an auſtere kind of life, ſubmitted themſelves to all theſe mortifications in private, without breaking aſunder their ſocial bands, or withdrawing themſelves from mankind; but in proceſs of time they retired into deſarts, and, after the example of the Eſſenes and Therapeutæ, they formed themſelves into certain companies.

This auſtere ſect aroſe from an opinion which has been more or leſs prevalent in all ages and in all countries, namely, that religion conſiſts more in prayers, meditations, and a kind of ſecret intercourſe with God, than in fulfilling the ſocial duties of life in acts of benevolence and humanity to mankind. Nothing can be more evident than that the Scripture reckons the fulfilling of theſe infinitely ſuperior to the obſervance of all the ceremonies that can be imagined: yet it ſomehow or other happens, that almoſt every body is more inclined to obſerve the ceremonial part of devotion than the moral; and hence, according to the different humours or conſtitutions of different perſons, there have been numberleſs forms of Chriſtianity, and the moſt virulent contentions among thoſe who profeſſed themſelves followers of the Prince of Peace. It is obvious, that if the moral conduct of Chriſtians was to be made the ſtandard of faith, inſtead of ſpeculative opinions, all theſe diviſions muſt ceaſe in a moment; but while Chriſtianity or any part of it, is made to conſiſt in ſpeculation, or the obſervance of ceremonies, it is impoſſible there can be any end of ſects or hereſies. No opinion whatever is ſo abſurd, but ſome people have pretended to argue in its defence; and no ceremony ſo inſignificant, but it hath been explained and ſanctified by hot-headed enthuſiaſts: and hence ceremonies, ſects, and abſurdities, have been multiplied without number, to the prejudice of ſociety and of the Chriſtian religion. This ſhort relation of the riſe of the Aſcetic ſect will alſo ſerve to account for the riſe of any other; ſo that we apprehend it is needleſs to enter into particulars concerning the reſt, as they all took their origin from the ſame general principle variouſly modified, according to the different diſpoſitions of mankind.

The Aſcetic ſect began firſt in Egypt, from whence it paſſed into Syria and the neighbouring countries. At length it reached the European nations: and hence that train of auſtere and ſuperſtitious vows and rites which totally obſcured, or rather annihilated, Chriſtianity; the celibacy of the clergy, and many other abſurdities of the like kind. The errors of the Aſcetics, however, did not ſtop here: In compliance with the doctrines of ſome Pagan Philoſophers, they affirmed, that it was not only lawful, but even praiſeworthy, to deceive, and to uſe the expedient of a lie, in order to advance the cauſe of piety and truth; and hence the *pious frauds* for which the church of Rome hath been ſo notorious, and with which ſhe hath been ſo often and juſtly reproached.

63 Conteſts concerning feſtivals.

As Chriſtians thus deviated more and more from the true practice of their religion, they became more zealous in the external profeſſion of it. Anniverſary feſtivals were celebrated in commemoration of the death and reſurrection of Chriſt, and of the effuſion of the Holy Ghoſt on the Apoſtles. Concerning the days on which theſe feſtivals were to be kept, there aroſe violent conteſts. The Aſiatic churches in general differed in this point from thoſe of Europe; and towards the concluſion of the ſecond century, Victor, biſhop of Rome took it in his head to force the eaſtern churches to follow the rules laid down by the weſtern ones. This they abſolutely refuſed to comply with: upon which Victor cut them off from communion with the church of Rome; though by means of the interceſſion of ſome prudent people, the difference was made up for the preſent.

64 Third century.

During moſt of the third century, the Chriſtians were allowed to enjoy their religion, ſuch as it was, without moleſtation. The emperors Maximinus and Decius, indeed, made them feel all the rigours of a ſevere perſecution; but their reigns were ſhort, and from the death of Decius to the time of Diocleſian the church enjoyed tranquillity. Thus vaſt multitudes were converted; but at the ſame time the doctrine grew daily more corrupt, and the lives of profeſſed Chriſtians more wicked and ſcandalous. New ceremonies were invented in great numbers, and an unaccountable paſſion now prevailed for the oriental ſuperſtitions concerning demons; whence proceeded the whole train of exorciſm, ſpells, and fears for the apparition of evil ſpirits, which to this day are no where eradicated. Hence alſo the cuſtom of avoiding all connections with thoſe who were not baptiſed, or who lay under the penalty of excommunication, as perſons ſuppoſed to be under the dominion of ſome evil ſpirit. And hence the rigour and ſeverity of that diſcipline and penance impoſed upon thoſe who had incurred, by their immoralities, the cenſure of the church. Several alterations were now made in the manner of celebrating the Lord's ſupper. The prayers uſed on this occaſion were lengthened, and the ſolemnity and pomp with which it was attended were conſiderably increaſed. Gold and ſilver veſſels were uſed in the celebration; it was thought eſſential to ſalvation, and for that reaſon adminiſtered even to infants.—Baptiſm was celebrated twice a year to ſuch as, after a long courſe of trial and preparation, offered themſelves candidates.

The remiſſion of ſins was thought to be its immediate conſequence; while the biſhop, by prayer and impoſition of hands, was ſuppoſed to confer thoſe ſanctifying gifts of the Holy Ghoſt that are neceſſary to a life of righteouſneſs and virtue. An evil demon was ſuppoſed naturally to reſide in every perſon who was the author and ſource of all the corrupt diſpoſitions and unrighteous actions of that perſon. The driving out of this demon was therefore an eſſential requiſite for baptiſm; and, in conſequence of this opinion the baptized perſons returned home clothed in white garments, adorned with crowns, as ſacred emblems, the former of their inward purity and innocence, and the latter of their victory over ſin and the world.—Faſtings began now to be held in more eſteem than formerly. A high degree of ſanctity was attributed to this practice; it was even looked upon as indiſpenſably neceſſary, from a notion that the demons directed their force chiefly againſt thoſe who pampered themſelves with delicious fares and were leſs troubleſome to the lean and hungry who lived under the ſeverities of a rigorous abſtinence.—The ſign of the croſs alſo was ſuppoſed to adminiſter a victorious power over all ſorts of trials and calamities; and was more eſpecially conſidered as the ſureſt defence againſt the ſnares and ſtratagems of malignant ſpirits; for which reaſon, no Chriſtian undertook any thing of moment, without arming himſelf, as he imagined, with the power of this triumphant ſign. The hereſies which troubled the church during this century, were the GNOSTICS, (whoſe doctrines were new-modelled and improved by Manes, from whom they were afterwards chiefly called *Manicheans*), the HIERACITES, NOETIANS, SABELLIANS, and NOVATIANS; for a particular account of which, ſee thoſe articles.

65 Fourth century.

The fourth century is remarkable for the eſtabliſhment of Chriſtianity by law in the Roman empire; which, however, did not take place till the year 324. In the beginning of this century, the empire was governed by four chiefs, viz. Diocleſian, Maximian Conſtantius Chlorus, and Galerius, under whom the church enjoyed a perfect toleration. Diocleſian, tho' much addicted to ſuperſtition, had no ill-will againſt the Chriſtians; and Conſtantius Chlorus, having abandoned polytheiſm, treated them with condeſcenſion and benevolence. This alarmed the Pagan prieſts, whoſe intereſts were ſo cloſely connected with the continuance of the ancient ſuperſtitions; and who apprehended, not without reaſon, that the Chriſtian religion would at length prevail throughout the empire. To prevent the downfal of the pagan ſuperſtition therefore, they applied to Diocleſian and Galerius Cæſar: by whom a moſt bloody perſecution was commenced in the year 303, and continued till 311. An aſylum, however, was opened for the Chriſtians in the year 304. Galerius having dethroned Diocleſian and Maximian, declared himſelf emperor in the eaſt; leaving all the weſtern provinces to which great numbers of Chriſtians reſorted to avoid the cruelty of the former to Conſtantius Chlorus. At length Galerius, being overtaken with an incurable and dreadful diſeaſe, publiſhed an edict ordering the perſecution to ceaſe, and reſtoring freedom to the Chriſtians, whom he had moſt inhumanely oppreſſed for eight years. Galerius died the ſame year; and in a ſhort time after, when Conſtantine the Great aſcended the throne, the Chriſtians were freed from any farther uneaſineſs, by his abrogating all the penal laws againſt them; and afterwards iſſuing edicts, by which no other religion than the Chriſtian was tolerated throughout the empire.

66 Chriſtianity eſtabliſhed by Conſtantine.

67 Increaſe of its corruptions,

This event, however, ſo favourable to the outward peace of the church, was far from promoting its internal harmony, or the reformation of its leaders. The clergy, who had all this time been augmenting their power at the expence of the liberty of the people, now ſet no bounds to their ambition. The biſhop of Rome was the firſt in rank, and diſtinguiſhed by a ſort of pre-eminency above the reſt of the prelates. He ſurpaſſed all his brethren in the magnificence and ſplendor of the church over which he preſided, in the riches of his revenues and poſſeſſions, in the number and variety of his miniſters, in his credit with the people, and in his ſumptuous and ſplendid manner of living. Hence it happened, that when a new pontiff was to be choſen by the preſbyters and people, the city of Rome was generally agitated with diſſenſions tumults, and cabals, which often produced fatal conſequences. The intrigues and diſturbances which prevailed in that city in the year 366, when, upon the death of Liberius, another pontiff was to be choſen in his place are a ſufficient proof of what we have advanced. Upon this occaſion, one faction elected Damaſus to that high dignity; while the oppoſite party choſe Urſicinus, a deacon of the vacant church, to ſucceed Liberius. This double election gave riſe to a dangerous ſchiſm, and to a ſort of civil war within the city of Rome: which was carried on with the utmoſt barbarity and fury, and produced the moſt cruel maſſacres and deſolations. The inhuman conteſt ended in the victory of Damaſus; but whether his cauſe was more juſt than that of Urſicinus, is not ſo eaſily determined.

Notwithſtanding the pomp and ſplendor which ſurrounded the Roman ſee, it is certain that the biſhops of Rome had not yet acquired that pre-eminence of power and juriſdiction which they afterwards enjoyed. In the eccleſiaſtical commonwealth, indeed, they were the moſt eminent order of citizens; but ſtill they were citizens as well as their brethren, and ſubject, like them, to the laws and edicts of the emperors. All religious cauſes of extraordinary importance were examined and determined, either by judges appointed by the emperors, or councils aſſembled for that purpoſe; while thoſe of inferior moment were decided in each diſtrict by its reſpective biſhop. The eccleſiaſtical laws were enacted either by the emperor or councils. None of the biſhops acknowledged that they derived their authority from the permiſſion and appointment of the biſhop of Rome, or that they were created biſhops by the favour of the *apoſtolic ſee*. On the contrary, they all maintained that they were the ambaſſadors and miniſters of Jeſus Chriſt, and that their authority was derived from above. It muſt, however, be obſerved, that even in this century ſeveral of thoſe ſteps were laid by which the biſhops of Rome mounted afterwards to the ſummit of eccleſiaſtical power and deſpotiſm. This happened partly by the imprudence of the emperors, partly by the dexterity of the Roman prelates themſelves, and partly by the inconſiderate zeal and precipitate judgment of certain biſhops. The imprudence of the emperor, and precipitation of the biſhops, were remarkably diſcovered in the following event, which favoured extremely the ambition of the Roman pontiff. About the year 372, Valentinian enacted a law, empowering the biſhop of Rome to examine and judge other biſhops, that religious diſputes might not be decided by any profane or ſecular judges. The biſhops aſſembled in council at Rome in 378, not conſidering the fatal conſequences that muſt ariſe from this imprudent law both to themſelves and to the church, declared their approbation in the ſtrongeſt terms, and recommended the execution of it in their addreſs to the emperor Gratian. Some think, indeed, that this law empowered the Roman biſhop to judge only the biſhops within the limits of his juriſdiction; others, that his power was given only for a certain time, and for a particular purpoſe. This laſt notion ſeems the moſt probable; but ſtill this privilege muſt have been an excellent inſtrument in the hands of ſacerdotal ambition.

68
Biſhops of Rome and Conſtantinople rival each other.

By the removal of the ſeat of empire to Conſtantinople, the emperor raiſed up, in the biſhop of this new metropolis, a formidable opponent to the biſhop of Rome, and a bulwark which threatened a vigorous oppoſition to his growing authority. For as the emperor, in order to render Conſtantinople a ſecond Rome, enriched it with all the rights and privileges, honours and ornaments, of the ancient capital of the world; ſo its biſhop, meaſuring his own dignity and rank by the magnificence of the new city, and its eminence as the reſidence of the emperor, aſſumed an equal degree of dignity with the biſhop of Rome, and claimed a ſuperiority over the reſt of the epiſcopal order. Nor did the emperors diſapprove of theſe high pretenſions, ſince they conſidered their own dignity as connected in a certain meaſure with that of the biſhop of their imperial city. Accordingly, in a council held at Conſtantinople in the year 381, by the authority of Theodoſius the Great, the biſhop of that city was, during the abſence of the biſhop of Alexandria, and againſt the conſent of the Roman prelate, placed by the third canon of that council in the firſt rank after the biſhop of Rome, and conſequently above thoſe of Alexandria and Antioch. Nectarius was the firſt biſhop who enjoyed theſe new honours accumulated upon the ſee of Conſtantinople. His ſucceſſor, the celebrated John Chryſoſtom, extended ſtill farther the privileges of that ſee, and ſubjected to its juriſdiction all Thrace, Aſia, and Pontus; nor were the ſucceeding biſhops of that imperial city deſtitute of a fervent zeal to augment their privileges and extend their dominion. By this unexpected promotion, the moſt diſagreeable effects were produced. The biſhops of Alexandria were not only filled with the moſt inveterate hatred againſt thoſe of Conſtantinople, but a contention was excited between the biſhops of Rome and Conſtantinople; which, after being carried on for many ages, concluded at laſt in the ſeparation of the Greek and Latin churches.

69
Form of church government eſtabliſhed by Conſtantine.

Conſtantine the Great, in order to prevent civil commotions, and to fix his authority on a ſtable and ſolid foundation, made ſeveral changes not only in the laws of the empire, but alſo in the form of the Roman government. And as there were many important reaſons which induced him to ſuit the adminiſtration of the church to theſe changes in the civil conſtitution, this neceſſarily introduced among the biſhops new degrees of eminence and rank. The four biſhops, of Rome, Conſtantinople, Antioch, and Alexandria, were diſtinguiſhed by a certain degree of pre-eminence over the reſt. Theſe four prelates anſwered to the four prætorian prefects created by Conſtantine; and it is poſſible, that even in this century they were diſtinguiſhed by the Jewiſh title of *patriarchs*. After theſe followed the *exarchs*, who had the inſpection of ſeveral provinces, and anſwered to the appointment of certain civil officers who bore the ſame title. In a lower claſs were the *metropolitans*, who had only the government of one province; under whom were the *archbiſhops*, whoſe inſpection was confined to certain diſtricts. In this gradation the *biſhops* brought up the rear; but the ſphere of their authority was not in all places equally extenſive; being in ſome conſiderably ample, and in others confined within narrow limits. To theſe various eccleſiaſtical orders we might add that of the *chorepiſcopi*, or ſuperintendents of the country-churches; but this laſt order was in moſt places ſuppreſſed by the biſhops, with a deſign to extend their own authority, and enlarge the ſphere of their power and juriſdiction. The adminiſtration of the church itſelf was divided by Conſtantine into an *external* and *internal* inſpection. The latter, which was committed to biſhops and councils, related to religious controverſies, the forms of divine worſhip, the offices of prieſts, the vices of the eccleſiaſtical orders, &c. The external adminiſtration of the church the emperor aſſumed to himſelf. This comprehended all thoſe things which related to the outward ſtate and diſcipline of the church; it likewiſe extended to all conteſts that ſhould ariſe between the miniſters of the church, ſuperior as well as inferior, concerning their poſſeſſions, their reputation, their rights and privileges, their offences againſt the laws, &c. but no controverſies that related to matters purely ſpiritual were cognizable by this external inſpection. In conſequence of this artful diviſion of the eccleſiaſtical government, Conſtantine and his ſucceſſors called councils, preſided in them, appointed the judges of religious controverſies, terminated the differences which aroſe between the biſhops and the people, fixed the limits of the eccleſiaſtical provinces, took cognizance of the civil cauſes that ſubſiſted between the miniſters of the church, and puniſhed the crimes committed againſt the laws by the ordinary judges appointed for that purpoſe; giving over all cauſes purely eccleſiaſtical to the biſhops and councils. But this famous diviſion of the adminiſtration of the church was never explained with ſufficient accuracy; ſo that both in the fourth and fifth centuries, there are frequent inſtances of the emperors determining matters purely eccleſiaſtical, and likewiſe of biſhops and councils determining matters which related merely to the external form and government of the church.

70
Scandalous lives of the clergy.

After the time of Conſtantine many additions were made by the emperors and others to the wealth and honours of the clergy; and theſe additions were followed by a proportionable increaſe of their vices and luxury, particularly among thoſe who lived in great and opulent cities. The biſhops, on the one hand, contended with each other in the moſt ſcandalous manner cerning the extent of their reſpective juriſdictions; while on the other, they trampled on the rights of the people, violated the privileges of the inferior miniſters, and imitated in their conduct and in their manner of living the arrogance, voluptuouſneſs, and luxury of magiſtrates and princes. This pernicious example was ſoon followed by the ſeveral eccleſiaſtical orders. The preſbyters, in many places, aſſumed an equality with the biſhops in point of rank and authority. Many complaints are alſo made by the authors of this century about the vanity and effeminacy of the deacons. Thoſe more particularly of the preſbyters and deacons who filled the firſt ſtations of theſe orders, carried their pretenſions to an extravagant length, and were offended at the notion of being placed on an equality with their colleagues. For this reaſon they not only aſſumed the titles of *arch-preſbyters* and *arch-deacons*, but alſo claimed a degree of authority and power much ſuperior to that which was veſted in the other members of their reſpective orders.

71
Conteſts between the biſhops of Rome and Conſtantinople.

In the fifth century, the biſhops of Conſtantinople having already reduced under their juriſdiction all the Aſiatic provinces, began to graſp at ſtill further acceſſions of power. By the 28th canon of the council held at Chalcedon in 451, it was reſolved, that the ſame rights and honours which had been conferred on the biſhop of Rome were due to the biſhop of Conſtantinople, on account of the equal dignity and luſtre of the two cities in which theſe prelates exerciſed their authority. The ſame council confirmed alſo, by a ſolemn act, the biſhop of Conſtantinople in the ſpiritual government of thoſe provinces over which he had uſurped the juriſdiction. Leo the Great, biſhop of Rome, oppoſed with vehemence the paſſing of theſe laws; and his oppoſition was ſeconded by that of ſeveral other prelates. But their efforts were vain, as the emperors threw in their weight into the balance, and thus ſupported the deciſions of the Grecian biſhops. In conſequence, then, of the deciſions of this famous council, the biſhop of Conſtantinople began to contend obſtinately for the ſupremacy with the Roman pontiff, and to cruſh the biſhops of Antioch and Alexandria. About the ſame time, Juvenal, biſhop of Jeruſalem, attempted to withdraw himſelf and his church from the juriſdiction of the biſhop of Cæſarea, and aſpired after a place among the firſt prelates of the Chriſtian world. The high degree of veneration and eſteem in which the church of Jeruſalem was held among all other Chriſtian ſocieties (on account of its rank among the apoſtolical churches, and its title to the appellation of *mother church*, as having ſucceeded the firſt Chriſtian aſſembly formed by the apoſtles), was extremely favourable to the ambition of Juvenal, and rendered his project much more practicable than it would otherwiſe have been. Encouraged by this, and likewiſe by the protection of Theodoſius the younger, this aſpiring prelate not only aſſumed the dignity of patriarch of all Paleſtine, a rank which rendered him independent of all ſpiritual authority; but alſo invaded the rights of the biſhop of Antioch, and uſurped his juriſdiction over the provinces of Phœnicia and Arabia. Hence aroſe a warm conteſt between Juvenal and Maximus biſhop of Antioch; which the council of Chalcedon decided, by reſtoring to the latter the provinces of Phœnicia and Arabia, and confirming the former in the ſpiritual poſſeſſion of all Paleſtine and in the high rank which he had aſſumed in the church.

In 588, John, biſhop of Conſtantinople, ſurnamed the *Faſter*, either by his own authority or that of the emperor Mauritius, ſummoned a council at Conſtantinople to enquire into an accuſation brought againſt Gregory, biſhop of Antioch; and upon this occaſion aſſumed the title of *œcumenical* or *univerſal biſhop*. This title had been formerly enjoyed by the biſhops of Conſtantinople without any offence; but now, Gregory the Great, at that time biſhop of Rome, ſuſpecting that John was aiming at the ſupremacy over all the churches, oppoſed his claim with the greateſt vigour. For this purpoſe he applied by letters to the emperor, and others, whom he thought capable of aſſiſting him in his oppoſition: but all his efforts were without effect; and the biſhops of Conſtantinople were allowed to enjoy the diſputed title, though not in the ſenſe which had alarmed the Roman pontiff.

Gregory, however, adhered tenaciouſly to his purpoſe, raiſed new tumults and diſſenſions among the clergy, and aimed at nothing leſs than an unlimited ſupremacy over the Chriſtian church. This ambitious deſign ſucceeded in the weſt; while in the eaſtern provinces, his arrogant pretenſions were ſcarcely reſpected by any but thoſe who were at enmity with the biſhop of Conſtantinople. How much the people were at this time deluded by the Roman pontiffs, appears from the expreſſion of Ennodius, one of the flatterers of Symmachus (who was a prelate of but ambiguous fame), that the Roman pontiff was conſtituted judge in the place of God, which he filled as the vicegerent of the Moſt High. On the other hand, it is certain, from a variety of the moſt authentic records, that both the emperors and the nations in general were far from being diſpoſed to bear with patience the yoke of ſervitude which the ſee of Rome was arrogantly impoſing on the whole church.

62
Origin of the ſupremacy of the pope.

In the beginning of the ſeventh century, according to the moſt learned hiſtorians, Boniface III. engaged Phocas, emperor of Coſtantinople, to take from the biſhop of that metropolis the title of *œcumenical* or *univerſal biſhop*, and to confer it upon the Roman pontiff; and thus was firſt introduced the ſupremacy of the pope. The Roman pontiffs uſed all methods to maintain and enlarge this authority and pre-eminence which they had acquired from one of the moſt odious tyrants that ever diſgraced the annals of hiſtory.

In the eighth century, the power of the biſhop of Rome, and of the clergy in general, increaſed prodigiouſly. The chief cauſe of this, beſides the ſuperſtition of the people, was the method at that time uſed by the European princes to ſecure themſelves on their thrones. All theſe princes being then employed either in uſurpation or in ſelf-defence, and the whole continent being in the moſt unſettled and barbarous condition, they endeavoured to attach warmly to their intereſts thoſe whom they conſidered as their friends and clients. For this purpoſe they diſtributed among them extenſive territories, cities, and fortreſſes, with the various rights and privileges belonging to them; reſerving only to themſelves the ſupreme dominion, and the military ſervice of theſe powerful vaſſals. For this reaſon it was by the European princes reckoned a high inſtance of political prudence to diſtribute among the biſhops and other Chriſtian doctors the ſame ſort of donations which had formerly been given to their generals and clients. By means of the clergy, they hoped to check the ſeditious and turbulent ſpirits of their vaſſals; and to maintain them in their obedience by the influence and authority of their biſhops, whoſe commands were highly reſpected, and whoſe ſpiritual thunderbolts, rendered formidable by ignorance, ſtruck terror into the boldeſt and moſt reſolute hearts.

This prodigious acceſſion to the opulence and authority of the clergy in the weſt, began at their head, viz. the Roman pontiff; from whence it ſpread gradually among the inferior ſacerdotal orders. The barbarous nations who had received the goſpel, looked upon the biſhop of Rome as the ſucceſſor of their chief druid or high prieſt: and as this tremendous druid had enjoyed under the darkneſs of Paganiſm, a kind of boundleſs authority; ſo theſe barbarous nations thought proper to confer upon the chief biſhop the ſame authority which had belonged to the chief druid. The pope received theſe auguſt privileges with great pleaſure; and leſt, upon any change of affairs, attempts ſhould be made to deprive him of them, he ſtrengthened his title to theſe extraordinary honours by a variety of paſſages drawn from ancient hiſtory, and, what is ſtill more aſtoniſhing, by arguments of a religious nature. This ſwelled the Roman druid to an enormous ſize; and gave to the ſee of Rome that high pre-eminence and deſpotic authority in civil and political matters, that were unknown to former ages. Hence among other unhappy circumſtances, aroſe that monſtrous and pernicious opinion, that ſuch perſons as were excluded from the communion of the church by the pontiff himſelf, or any of the biſhops, forfeited thereby, not only their civil rights and advantages as citizens, but even the common claims and privileges of humanity. This horrid opinion, which was a fatal ſource of wars, maſſacres and rebellions, without number, and which contributed more than any thing elſe to confirm and augment the papal authority, was borrowed by the clergy from the Pagan ſuperſtitions.—Though excommunication, from the time of Conſtantine the Great, was in every part of the Chriſtian world attended with many diſagreeable effects; yet its higheſt terrors were confined to Europe, where its aſpect was truly formidable and hideous. It acquired alſo, in the eighth century, new acceſſions of terror; ſo that from that period the excommunication practiſed in Europe differed entirely from that which was in uſe in other parts of Chriſtendom. Excommunicated perſons were indeed conſidered in all places as objects of hatred both to God and man: but they were not, on that account, robbed of the privileges of citizens, nor of the rights of humanity; much leſs were thoſe kings and princes, whom an inſolent biſhop had thought proper to exclude from the communion of the church, ſuppoſed to forfeit on that account their crowns or their territories. But from this century it was quite otherwiſe in Europe. Excommunication received that infernal power which diſſolved all connections; ſo that thoſe whom the biſhops, or their chief, excluded from church communion, were degraded to a level with the beaſts. The origin of this unnatural and horrid power was as follows. On the converſion of the barbarous nations to Chriſtianity, theſe ignorant proſelytes confounded the excommunication in uſe among Chriſtians with that which had been practiſed in the times of Paganiſm, and which was attended with all the dreadful effects abovementioned. The Roman pontiffs, on the other hand, were too artful not to encourage this error; and therefore employed all ſorts of means to gain credit to an opinion ſo well calculated to gratify their ambition, and to aggrandize in general the epiſcopal order.

73
He becomes a temporal prince.

The annals of the French nation furniſh us with the following inſtance of the enormous power which was at this time veſted in the Roman pontiff. Pepin, who was mayor of the palace to Childeric III. king of France, and who in the exerciſe of that high office was poſſeſſed in reality of the royal power and authority, aſpired to the titles and honours of majeſty alſo, and formed a ſcheme of dethroning his ſovereign. For this purpoſe he aſſembled the ſtates in 751; and though they were devoted to the intereſts of this ambitious uſurper, they gave it as their opinion that the biſhop of Rome was previouſly to be conſulted whether the execution of ſuch a ſcheme was lawful or not. In conſequence of this, ambaſſadors were ſent by Pepin to Zachary, the reigning pontiff, with the following queſtion, "Whether the divine law did not permit a valiant and warlike people to dethrone a puſillanimous and indolent prince who was incapable of diſcharging any of the functions of royalty; and to ſubſtitute in his place one more worthy to rule, and who had already rendered moſt important ſervices to the ſtate?" The ſituation of Zachary, who ſtood much in need of the ſuccours of Pepin againſt the Greeks and Lombards, rendered his anſwer ſuch as the uſurper deſired: and when this favourable deciſion of the Roman oracle was publiſhed in France, the unhappy Childeric was ſtripped of his royalty without the leaſt oppoſition; and Pepin, without the ſmalleſt reſiſtance, ſtepped into the throne of his maſter and his ſovereign. This deciſion was ſolemnly confirmed by Stephen II. the ſucceſſor of Zachary; who undertook a journey into France in the year 754 in order to ſolicit aſſiſtance againſt the Lombards. The pontiff at the ſame time diſſolved the obligation of the oath of fidelity and allegiance which Pepin had ſworn to Childeric, and violated by his uſurpation in the year 751; and to render his title to the crown as ſacred as poſſible, Stephen anointed and crowned him, with his wife and two ſons, for the ſecond time. This complaiſance of the pope was rewarded with the exarchate of Ravenna and all its dependencies, as we have already related. See *Civil Hiſtory*, n° 44. *ſupra*; and Hiſtory of ITALY.

74
His power ſtill increaſes.

In the ſucceeding centuries, the Roman pontiffs continued to increaſe their power by every kind of artifice and fraud which can diſhonour the heart of man; and, by continually taking advantage of the civil diſſentions which prevailed throughout Italy, France, and Germany, their influence in civil affairs aroſe to an enormous height. The increaſe of their authority in religious matters were not leſs rapid. The wiſeſt and moſt impartial among the Roman Catholic writers acknowledge, that from the time of Louis the Meek the ancient rules of eccleſiaſtical government were gradually changed in Europe by the counſels and inſtigation of the church of Rome, and new laws ſubſtituted in their place. The European princes ſuffered themſelves to be diveſted of the ſupreme authority in religious matters, which they had derived from Charlemagne; the power of the biſhops was greatly diminiſhed, and even the authority of both provincial and general councils began to decline. The popes, elevated with their overgrown proſperity, and become arrogant beyond meaſure by the daily acceſſions that were made to their authority, were eagerly bent upon eſtabliſhing the maxim, That the biſhop of Rome was conſtituted and appointed by Jeſus Chriſt ſupreme legiſlator and judge of the church univerſal; and that therefore the biſhops derived all their authority from him. This opinion, which they inculcated with the utmoſt zeal and ardour, was oppoſed in vain by ſuch as were acquainted with the ancient eccleſiaſtical conſtitutions, and the government of the church in the earlier ages. In order to gain credit to this new eccleſiaſtical code, and to ſupport the pretenſions of the popes to ſupremacy, it was neceſſary to produce the authority of ancient deeds, in order to ſtop the mouths of ſuch as were diſpoſed to ſet bounds to their uſurpations. The biſhops of Rome were aware of this; and as thoſe means were looked upon as the moſt lawful that tended beſt to the accompliſhment of their purpoſes, they employed ſome of their moſt ingenious and zealous partiſans in forging conventions, acts of councils, epiſtles, and ſuch-like records, by which it might appear, that in the firſt ages of the church the Roman pontiffs were cloathed with the ſame ſpiritual majeſty and ſupreme athority which they now aſſumed. There were not, however, wanting among the biſhops ſome men of prudence and ſagacity, who ſaw through theſe impious frauds, and perceived the chains that were forging both for them and the church. The French biſhops diſtinguiſhed themſelves eminently in this reſpect: but their oppoſition was ſoon quaſhed; and as all Europe was ſunk in the groſſeſt ignorance and darkneſs, none remained who were capable of detecting theſe odious impoſtures, or diſpoſed to ſupport the expiring liberty of the church.

75 Extreme inſolence of the popes.

This may ſerve as a general ſpecimen of the character and behaviour of the pretended vicegerents of Jeſus Chriſt to the 16th century. In the 11th century, indeed, their power ſeems to have riſen to its utmoſt height. They now received the pompous titles of *Maſters of the world*, and *Popes*, i. e. *univerſal fathers*. They preſided every where in the councils by their legates, aſſumed the authority of ſupreme arbiters in all controverſies that aroſe concerning religion or church-diſcipline, and maintained the pretended rights of the church againſt the encroachments and uſurpations of kings and princes. Their authority, however, was confined within certain limits: for, on the one hand, it was reſtrained by ſovereign princes, that it might not arrogantly aim at civil dominion; and, on the other, it was oppoſed by the biſhops themſelves, that it might not ariſe to a ſpiritual deſpotiſm, and utterly deſtroy the privileges and liberty of ſynods and councils. From the time of Leo IX. the popes employed every method which the moſt artful ambition could ſuggeſt to remove thoſe limits, and to render their dominion both deſpotic and univerſal. They not only aſpired to the character of ſupreme legiſlators in the church, to an unlimited juriſdiction over all ſynods and councils whether general or provincial, to the ſole diſtribution of all eccleſiaſtical honours and benefices, as divinely authoriſed and appointed for that purpoſe; but they carried their inſolent pretenſions ſo far, as to give themſelves out for lords of the univerſe, arbiters of the fate of kingdoms and empires, and ſupreme rulers over the kings and princes of the earth. Hence we find inſtances of their giving away kingdoms, and looſing ſubjects from their allegiance to their ſovereigns; among which the hiſtory of John king of England is moſt remarkable. At laſt they plainly aſſumed the whole earth as their property, as well where Chriſtianity was preached as where it was not; and therefore, on the diſcovery of America and the Eaſt-Indies, the pope, by virtue of this ſpiritual property, granted the Portugueſe a right to all the countries lying eaſtward, and to the Spaniards all thoſe lying to the weſtward, of Cape Non in Africa which they were able to conquer by force of arms; and that nothing might be wanting to complete their character, they pretended to be lords of the future world alſo, and to have a power of reſtraining even the divine juſtice itſelf, and remitting that puniſhment which the Deity hath denounced againſt the workers of iniquity.

76 Chriſtianity greatly corrupted. Invocations of ſaints, relics, purgatory, &c. introduced.

All this time the power of ſuperſtition reigned triumphant over the remains of Chriſtianity which had eſcaped the corruptions of the firſt four centuries. In the fifth century began the invocation of the happy ſouls of departed ſaints. Their aſſiſtance was intreated by many fervent prayers, while none ſtood up to oppoſe this prepoſterous kind of worſhip. The images of thoſe who during their lives had acquired the reputation of uncommon ſanctity, were now honoured with a particular worſhip in ſeveral places; and many imagined that this drew into the images the propitious preſence of the ſaints or celeſtial beings which they were ſuppoſed to repreſent. A ſingular and irreſiſtible efficacy was attributed to the bones of martyrs, and to the figure of the croſs, in defeating all the attempts of Satan, removing all ſorts of calamities, and in healing not only the diſeaſes of the body, but alſo thoſe of the mind. The famous Pagan doctrine concerning the *purification of departed ſouls* by means of a certain kind of fire; *i. e.* purgatory, was alſo confirmed and explained more fully than it had formerly been; and every one knows of how much conſequence this abſurd doctrine hath been to the wealth and power of the Romiſh clergy.

77 Introduction of the maſs.

In the ſixth century, Gregory the Great advanced an opinion, That all the *words* of the ſacred writings were *images* of inviſible and ſpiritual things; for which reaſon he loaded the churches with a multitude of ceremonies the moſt inſignificant and futile that can be imagined; and hence aroſe a new and moſt difficult ſcience, namely, the explication of theſe ceremonies, and the inveſtigation of the cauſes and circumſtances whence they derived their origin. A new method was contrived of adminiſtering the Lord's ſupper, with a magnificent aſſemblage of pompous ceremonies. This was called the *canon of the maſs*. Baptiſm, except in caſes of neceſſity, was adminiſtered only on the great feſtivals. An incredible number of temples were erected in honour of the ſaints. The places ſet apart for public worſhip were alſo very numerous: but now they were conſidered as the means of purchaſing the pro-tion and favour of the ſaints; and the ignorant and barbarous multitude were perſuaded, that theſe departed ſpirits defended and guarded againſt evils and calamities of every kind, the provinces, lands, cities, and villages in which they were honoured with temples. The number of theſe temples were almoſt equalled by that of the feſtivals, which ſeem to have been invented in order to bring the Chriſtian religion as near the model of Paganiſm as poſſible.

78 Superſtition ſtill increaſes. In the ſeventh century, religion ſeemed to be altogether buried under a heap of ſuperſtitious ceremonies; the worſhip of the true God and Saviour of the world was exchanged for the worſhip of bones, bits of wood (ſaid to be of the croſs), and the images of ſaints. The eternal ſtate of miſery threatened in Scripture to the wicked was exchanged for the temporary puniſhment of purgatory; and the expreſſions of faith in Chriſt by an upright and virtuous conduct, for the augmentation of the riches of the clergy by donations to the church, and the obſervance of a heap of idle ceremonies. New feſtivals were ſtill added; one in particular was inſtituted in honour of the *true croſs* on which our Saviour ſuffered: and churches were declared to be ſanctuaries to all ſuch as fled to them, whatever their crimes might have been.

Superſtition, it would ſeem, had now attained its higheſt pitch; nor is it eaſy to conceive a degree of ignorance and degeneracy beyond what we have already mentioned. If any thing can poſſibly be imagined more contrary to true religion, it is an opinion which prevailed in the eighth century, namely, That Chriſtians might appeaſe an offended Deity by voluntary acts of mortification, or by gifts and oblations laviſhed on the church; and that people ought to place their confidence in the works and merits of the ſaints. The piety in this and ſome ſucceeding ages conſiſted in building and embelliſhing churches and chapels; in endowing monaſteries and baſilics; hunting after the relics of ſaints and martyrs, and treating them with an abſurd and exceſſive veneration; in procuring the interceſſion of the ſaints by rich oblations, or ſuperſtitious rites; in worſhipping images; in pilgrimages to thoſe places which were eſteemed holy, particularly to Paleſtine, &c. The genuine religion of Jeſus was now utterly unknown both to clergy and people, if we except a few of its general doctrines contained in the creed. In this century alſo, the ſuperſtitious cuſtom of *ſolitary maſſes* had its origin. Theſe were celebrated by the prieſt alone in behalf of ſouls detained in purgatory, as well as upon ſome other occaſions. They were prohibited by the laws of the church, but proved a ſource of immenſe wealth to the clergy. Under Charlemagne they were condemned by a ſynod aſſembled at Mentz, as criminal effects of avarice and ſloth. A new ſuperſtition, however, ſtill ſprung up in the tenth century. It was imagined, from Rev. xx. 1. that Antichriſt was to make his appearance on the earth, and that ſoon after the world would be deſtroyed. An univerſal panic enſued; vaſt numbers of people, abandoning all their connections in ſociety, and giving over to the churches and monaſteries all their worldly effects, repaired to Paleſtine, where they imagined that Chriſt would deſcend from heaven to judge the world. Others devoted themſelves by a ſolemn and voluntary oath to the ſervice of the churches convents, and prieſthood, whoſe ſlaves they became, in the moſt rigorous ſenſe of that word, performing daily their heavy taſks, and all this from a notion that the ſupreme judge would diminiſh the ſeverity of their ſentence, and look upon them with a more favourable and propitious eye, on account of their having made themſelves the ſlaves of his miniſters. When the eclipſe of the ſun or moon happened to be viſible, the cities were deſerted, and their miſerable inhabitants fled for refuge to hollow caverns, and hid themſelves among the craggy rocks, and under the bending ſummits of ſteep mountains. The opulent attempted to bribe the ſaints and the Deity himſelf by rich donations conferred upon the ſacerdotal tribe, who were looked upon as the immediate vicegerents of heaven. In many places, temples, palaces, and noble edifices both public and private, were ſuffered to decay, nay, were deliberately pulled down, from a notion that they were no longer of any uſe, as the final diſſolution of all things was at hand. In a word, no language is ſufficient to expreſs the confuſion and deſpair that tormented the minds of miſerable mortals upon this occaſion. The general deluſion was indeed oppoſed and combated by the diſcerning few, who endeavoured to diſpel theſe terrors, and efface the notion from which they aroſe in the minds of the people. But their attempts were ineffectual; nor could the dreadful apprehenſions of the ſuperſtitious multitude be removed before the end of the century, and this terror became one of the accidental cauſes of the CROISADES.

That nothing might now be wanting to complete that antichriſtian ſyſtem of religion which had overſpread all Europe, it was in the 11th century determined that divine worſhip ſhould be celebrated in the Latin tongue, though now unknown throughout the whole continent. During the whole of this century, alſo, Chriſtians were employed in the rebuilding and ornamenting their churches, which they had deſtroyed through the ſuperſtitious fear already taken notice of.

In much the ſame way with what is above related, or worſe, if poſſible, matters went on till the time of the reformation. The clergy were immerſed in crimes of the deepeſt dye; and the laity, imagining themſelves able to purchaſe pardon of their ſins for money, followed the examples of their paſtors without remorſe. **79 Extravagant behaviour of the reputed ſaints.** The abſurd principle formerly mentioned, namely, that religion conſiſts in acts of auſterity, and an unknown mental correſpondence with God, produced the moſt extravagant and ridiculous behaviour in the devotees and reputed ſaints. They not only lived among the wild beaſts, but alſo after the manner of theſe ſavage animals: they ran naked through the lonely deſarts with a furious aſpect, and all the agitations of madneſs and frenzy; they prolonged their wretched life by graſs and wild herbs, avoided the ſight and converſation of men, remaining almoſt motionleſs in certain places for ſeveral years expoſed to the rigour and inclemency of the ſeaſons, and towards the concluſion of their lives ſhut themſelves up in narrow and miſerable huts; and all this was conſidered as true piety, the only acceptable method of worſhipping the Deity and attaining a ſhare in his favour.—But of all the inſtances of ſuperſtitious frenzy which diſgraced the times we now ſpeak of, none was held in higher veneration, or excited more the wonder of the multitude,

tude, than that of a certain order of men who were called *Stilites* by the Greeks, and *Sancti Columnares*, or Pillar Saints, by the Latins. Theſe were perſons of a moſt ſingular and extravagant turn of mind, who ſtood motionleſs on the tops of *pillars* expreſsly raiſed for this exerciſe of their patience, and remained there for ſeveral years amidſt the admiration and applauſe of the ſtupid populace. The inventor of this ſtrange diſcipline was one *Simeon* a Syrian, who began his follies by changing the agreeable employment of a ſhepherd for the auſterities of a monkiſh life. He began his devotion on the top of a pillar ſix cubits high; but as he increaſed in ſanctity, he alſo increaſed the height of his pillar, till, towards the concluſion of his life, he had got up on the top of a pillar 40 cubits in height. Many of the inhabitants of Syria and Paleſtine, ſeduced by a falſe ambition and an utter ignorance of true religion, followed the example of this fanatic, though not with the ſame degree of auſterity. This ſuperſtitious practice began in the fifth century, and continued in the eaſt for 600 years. The Latins, however, had too much wiſdom and prudence to imitate the Syrians and Orientals in this whimſical ſuperſtition: and when a certain fanatic, or impoſtor, named *Wulfilaicus*, erected one of theſe pillars in the country of Treves, and propoſed to live on it after the manner of Simeon, the neighbouring biſhops ordered it to be pulled down.

The practices of auſtere worſhip and diſcipline in other reſpects, however, gained ground throughout all parts of Chriſtendom. Monks of various kinds were to be found in every country in prodigious numbers. But though their diſcipline was at firſt exceedingly ſevere, it became gradually relaxed, and the monks gave into all the prevailing vices of the times. Other orders ſucceeded, who pretended to ſtill greater degrees of ſanctity, and to reform the abuſes of the preceding ones; but theſe in their turn became corrupted and fell into the ſame vices they had blamed in others. The moſt violent animoſities, diſputes, and hatred, alſo reigned among the different orders of monks; and, indeed, between the clergy of all ranks and degrees, whether we conſider them as claſſed in different bodies, or as individuals of the ſame body. To enter into a detail of their wranglings and diſputes, the methods which each of them took to aggrandiſe themſelves at the expence of their neighbours, and to keep the reſt of mankind in ſubjection, would require many volumes. We ſhall only obſerve, therefore, that even the external profeſſion of the auſtere and abſurd piety which took place in the fourth and fifth centuries, continued gradually to decline. Some there were, indeed, who boldly oppoſed the torrent of ſuperſtition and wickedneſs which threatened to overflow the whole world: but their oppoſition proved fruitleſs, and all of theſe towards the era of the reformation had been either ſilenced or deſtroyed: ſo that, at that time, the pope and clergy reigned over mankind without controul; had made themſelves maſters of almoſt all the wealth in every country of Europe, and may truly be ſaid to have been the only *ſovereigns*; the reſt of the human race, even kings and princes, being only their vaſſals and ſlaves.

80 Riſe of Mahometaniſm.

While the Popiſh ſuperſtition reigned thus violently in the weſt, the abſurd doctrines of Mahomet overſpread all the eaſt. The riſe of this impoſtor is related under the article Arabia. His ſucceſſors conquered in order to eſtabliſh the religion of their apoſtle; and thus the very name of Chriſtianity was extinguiſhed in many places where it had formerly flouriſhed. The conqueſts of the Tartars having intermingled them with the Mahometans, they greedily embraced the ſuperſtitions of that religion, which thus almoſt entirely overſpread the whole continents of Aſia and Africa; and, by the conqueſt of Conſtantinople by the Turks in 1453, was likewiſe eſtabliſhed throughout a conſiderable part of Europe.

81 State of religion in the beginning of the 16th century and ſince that time.

About the beginning of the 16th century, the Roman pontiffs lived in the utmoſt tranquillity; nor had they, according to the appearance of things at that time, any reaſon to fear an oppoſition to their authority in any reſpect, ſince the commotions which had been raiſed by the Waldenſes, Albigenſes, &c. were now entirely ſuppreſſed. We muſt not, however, conclude, from this apparent tranquillity and ſecurity of the pontiffs and their adherents, that their meaſures were univerſally applauded. Not only private perſons, but alſo the moſt powerful princes and ſovereign ſtates, exclaimed loudly againſt the tyranny of the popes, and the unbridled licentiouſneſs of the clergy of all denominations. They demanded, therefore, a reformation of the church in its head and members, and a general council to accompliſh that neceſſary purpoſe. But theſe complaints and demands were not carried to ſuch a length as to produce any good effect; ſince they came from perſons who never entertained the leaſt doubt about the ſupreme authority of the pope in religious matters, and who of conſequence, inſtead of attempting themſelves to bring about that reformation which was ſo ardently deſired, remained entirely inactive, or looked for redreſs to the court of Rome, or to a general council. But while the ſo much deſired reformation ſeemed to be at ſuch a great diſtance, it ſuddenly aroſe from a quarter whence it was not at all expected. A ſingle perſon, Martin Luther, a monk of the order of St Auguſtine, ventured to oppoſe himſelf to the whole torrent of papal power and deſpotiſm. This bold attempt was firſt made public on the 30th of September 1517; and, notwithſtanding all the efforts of the pope and his adherents, the doctrines of Luther continued daily to gain ground. Others, encouraged by his ſucceſs, lent their aſſiſtance in the work of reformation; which at laſt produced new churches, founded upon principles quite different from that of Rome, and which ſtill continue. But for a particular account of the tranſactions of the firſt reformers, the oppoſition they met with, and the final ſettlement of the reformed churches in different nations in Europe, ſee the articles Luther and Reformation.

The ſtate of religion in other parts of the world ſeems as yet to be but little altered. Aſia and Africa are ſunk in the groſſeſt ſuperſtitions either of the Mahommedan or Pagan kinds. The ſouthern continent of America, belonging to the Spaniards, continues immerſed in the moſt abſurd ſuperſtitions of Popery. The northern continent, being moſtly peopled with colonies from Great Britain, profeſſes the reformed religion. At the ſame time it muſt be owned, that ſome kind of reformation hath taken place even in Popery and Mahommedaniſm themſelves. The popes have no longer that authority over ſtates and princes, even thoſe moſt bigotted to Popery, which they formerly had. Neither are the lives either of the clergy or laity ſo corrupt as they were before. The increaſe of learning in all parts of the world has contributed to cauſe men open their eyes to the light of reaſon, and this hath been attended with a proportional decreaſe of ſuperſtition. Even in Mahommedan countries, that furious enthuſiaſm which formerly emboldened the inhabitants to face the greateſt dangers, hath now almoſt vaniſhed; ſo that the credit of Mahomet himſelf ſeems to have ſunk much in the eſtimation of his followers. This is to be underſtood even of the moſt ignorant and bigoted multitude; and the ſenſible part of the Turks are ſaid to incline much towards deiſm. With regard to thoſe nations which ſtill profeſs Paganiſm, the intercourſe of Europeans with them is ſo ſmall, that it is impoſſible to ſay any thing concerning them. As none of them are in a ſtate of civilization, however, it may be conjectured, that their religion is of the ſame unpoliſhed caſt with their manners; and that it conſiſts of a heap of barbarous ſuperſtitions which have been handed down among them from time immemorial, and which they continue to obſerve without knowing why or wherefore.

SECT. III. *Of the Compoſition of Hiſtory.*

84

Cicero's rules.

CICERO has given us the whole art of compoſing hiſtory, in a very ſhort and comprehenſive manner. We ſhall firſt tranſcribe what he ſays, and then conſider the ſeveral parts of it in their proper order. "No one is ignorant (ſays he), that the firſt law in writing hiſtory is, Not to dare to ſay any thing that is falſe; and the next, not to be afraid to ſpeak the truth: that on the one hand there be no ſuſpicion of affection, nor of prejudice on the other. Theſe foundations are what all are acquainted with. But the ſuperſtructure conſiſts partly in things, and partly in the ſtyle or language. The former require an order of times, and deſcriptions of places. And becauſe in great and memorable events, we are deſirous to know firſt their cauſes, then the actions themſelves, and laſtly their conſequences; the hiſtorian ſhould take notice of the ſprings or motives that occaſioned them; and, in mentioning the facts themſelves, ſhould not only relate what was done or ſaid, but likewiſe in what manner; and, in treating upon their conſequences, ſhow if they were the effects of chance, wiſdom, or imprudence. Nor ſhould he only recite the actions of great and eminent perſons, but likewiſe deſcribe their characters. The ſtyle ought to be fluent, ſmooth, and even, free from that harſhneſs and poignancy which is uſual at the bar." Thus far Cicero. An hiſtory written in this manner, and furniſhed with all theſe properties, muſt needs be very entertaining, as well as inſtructive. And perhaps few have come nearer this plan than Tacitus: though his ſubject is attended with this unhappy circumſtance, or at leaſt unpleaſant one, that it affords us examples rather of what we ought to avoid than what to imitate. But it is the buſineſs of the hiſtorian, as well as of the philoſopher, to repreſent both virtues and vices in their proper colours; the latter doing it by precepts, and the former by examples. Their manner is different; but the end and deſign of both is, or ſhould be, the ſame: And therefore hiſtory has not improperly been ſaid by ſome to be moral philoſophy exemplified in the lives and actions of mankind.

De Orat. Lib. ii. c. 15.

We ſhall reduce theſe ſeveral things mentioned by Cicero to three heads, Matter, Order, and Style; and treat upon each of them ſeparately. But as Truth is the baſis and foundation of all hiſtory, it will be neceſſary to conſider that in the firſt place.

ART. I. Of TRUTH in Hiſtory.

83

Of hiſtoric truth.

TRUTH is, as it were, the very life and ſoul of hiſtory, by which it is diſtinguiſhed from fable or romance. An hiſtorian therefore ought not only to be a man of probity, but void of all paſſion or bias. He muſt have the ſteadineſs of a philoſopher, joined with the vivacity of a poet or orator. Without the former, he will be inſenſibly ſwayed by ſome paſſion to give a falſe colouring to the actions or characters he deſcribes, as favour or diſlike to parties or perſons affect his mind. Whereas he ought to be of no party, nor to have either friend or foe while writing; but to preſerve himſelf in a ſtate of the greateſt indifferency to all, that he may judge of things as they really are in their own nature, and not as connected with this or that perſon or party. And with this firm and ſedate temper, a lively imagination is requiſite; without which his deſcriptions will be flat and cold, nor will he be able to convey to his readers a juſt and adequate idea of great and generous actions. Nor is the aſſiſtance of a good judgment leſs neceſſary than any of the former qualities, to direct him what is proper to be ſaid and what to be omitted, and to treat every thing in a manner ſuitable to its importance. And ſince theſe are the qualifications neceſſary for an hiſtorian, it may perhaps ſeem the leſs ſtrange that we have ſo few good hiſtories.

But hiſtorical truth conſiſts of two parts; one is, Not to ſay any thing we know to be falſe: Though it is not ſufficient to excuſe an hiſtorian in relating a falſehood that he did not know it was ſo when he wrote it, unleſs he firſt uſed all the means in his power to inform himſelf of the truth; for then, undoubtedly, an invincible error is as unpardonable in hiſtory as in morality. But the generality of writers in this kind content themſelves with taking their accounts from hearſays, or tranſcribing them from others; without duly weighing the evidence on which they are founded, or giving themſelves the trouble of a ſtrict inquiry. Few will uſe the diligence neceſſary to inform themſelves of the certainty of what they undertake to relate. And as the want of this greatly abates the pleaſure of reading ſuch writers, while perſons read with diffidence; ſo nothing more recommends an hiſtorian than ſuch induſtry. Thus we are informed of Thucydides, that when he wrote his hiſtory of the Peloponneſian war, he did not ſatisfy himſelf with the beſt accounts he could get from his countrymen the Athenians, fearing they might be partial in their own cauſe; but ſpared no expence to inform himſelf how the ſame facts were related by their enemies the Lacedemonians; that, by comparing the relations of both parties, he might better judge of the truth. And Polybius took greater pains than he, in order to write his hiſtory of the Roman affairs; for he travelled into Africa, Spain, Gaul, and other parts of the world, that by viewing the ſeveral ſcenes of action, and informing himſelf from the inhabitants, he might come at a greater certainty of the facts, and repreſent them in a juſter light. But as an hiſtorian ought not to aſſert what he knows to be falſe; ſo he ſhould likewiſe be cautious in relating things which are doubtful, and acquaint his readers with the evidence he goes upon in ſuch facts, from whence they may be able to judge how far it is proper to credit them. So Herodotus tells us what things he ſaw himſelf in his travels, and what he heard from the information of the Egyptian prieſts and others with whom he converſed. And Curtius, in the life of Alexander, ſpeaking of the affairs of India, ingenuouſly confeſſes, that he wrote more than he fully believed. "For (ſays he) I neither dare to affirm poſitively what I doubt of, nor can I think it proper to omit what I have been told." By ſuch a conduct the author ſecures his credit, whether the things prove really true or falſe; and gives room for further inquiry, without impoſing on his readers.

The other branch of hiſtorical truth is, Not to omit any thing that is true, and neceſſary to ſet the matter treated of in a clear and full light. In the actions of paſt ages or diſtant countries, wherein the writer has no perſonal concern, he can have no great inducement to break in upon this rule. But where intereſt or party is engaged, it requires no ſmall candour, as well as firmneſs of mind, conſtantly to adhere to it. Affection to ſome, averſion to others, fear of diſobliging friends or thoſe in power, will often interpoſe and try his integrity. Beſides, an omiſſion is leſs obvious to cenſure, than a falſe aſſertion: for the one may be eaſily aſcribed to ignorance or forgetfulneſs; whereas the other will, if diſcovered, be commonly looked upon as deſign. He therefore, who in ſuch circumſtances, from a generous love to truth, is ſuperior to all motives to betray or ſtifle it, juſtly deſerves the character of a brave as well as honeſt man. What Polybius ſays upon this head is very well worth remarking: "A good man ought to love his friends and his country, and to have a like diſpoſition with them, both towards their friends and enemies. But when he takes upon him the character of an hiſtorian, they muſt all be forgot. He muſt often ſpeak well of his enemies, and commend them when their actions deſerve it; and ſometimes blame, and even upbraid his greateſt friends, when their conduct makes it neceſſary. Nor muſt he forbear ſometimes to reprove, and at other times to commend, the ſame perſons; ſince all are liable to miſtake in their management, and there are ſcarce any perſons who are always in the wrong. Therefore, in hiſtory, all perſonal conſiderations ſhould be laid aſide, and regard had only to their actions."

What a different view of mankind and their actions ſhould we have were theſe rules obſerved by all hiſtorians? Integrity is undoubtedly the principal qualification of an hiſtorian; when we can depend upon this, other imperfections are more eaſily paſſed over. Suetonius is ſaid to have written the lives of the firſt twelve Roman emperors with the ſame freedom wherewith they themſelves lived. What better character can be given of a writer? The ſame ingenious temper appears in the two Grecian hiſtorians above mentioned, Thucydides and Polybius: The former of whom, though baniſhed by his countrymen the Athenians, yet expreſſes no marks of reſentment in his hiſtory, either againſt them in general, or even againſt the chief authors of it, when he has occaſion to mention them; and the latter does not forbear cenſuring what he thought blameable in his neareſt relations and friends. But it is often no eaſy matter to know whether an hiſtorian ſpeaks truth or not, and keeps up to the ſeveral characters here mentioned; tho' it ſeems reaſonable, upon the common principles of juſtice due to all mankind, to credit him where no marks of partiality or prejudice appear in his writings. Sometimes, indeed, a judgment may in a good meaſure be formed of the veracity of an author from his manner of expreſſing himſelf. A certain candour and frankneſs, that is always uniform and conſiſtent with itſelf, runs through their writings who have nothing in view but truth, which may be juſtly eſteemed as a very good evidence of their ſincerity. Whereas thoſe who have partial deſigns to anſwer are commonly more cloſe and covert; and if at other times they aſſume an air of openneſs and freedom, yet this is not conſtant and even, but ſoon followed again with the appearance of ſome bias and reſerve: for it is very difficult to act a part long together without lying open to a diſcovery. And therefore, though craft and deſign is exceedingly various, and, Proteus-like, aſſumes very different ſhapes, there are certain characters by which it may often be perceived and detected. Thus, where things are uncertain by reaſon of their being reported various ways, it is partiality in an hiſtorian to give into the moſt unfavourable account, where others are as well known and equally credible. Again, it is a proof of the ſame bad temper, when the facts themſelves are certain and evident, but the deſign and motives of thoſe concerned in them are unknown and obſcure, to aſſign ſome ill principle, ſuch as avarice, ambition, malice, intereſt, or any other vicious habit, as the cauſe of them. This conduct is not only unjuſt to the perſons whoſe actions they relate; but hurtful to mankind in general, by endeavouring to deſtroy the principal motive to virtue, which ſprings from example. Others, who affect to be more covert, content themſelves with ſuſpicious and ſly inſinuations; and then endeavour to come off, by intimating their unwillingneſs to believe them, tho' they would have their readers do ſo. And to mention no more, there are others, who, when they have loaded perſons with unjuſt calumnies and reflections, will allow them ſome ſlight commendations, to make what they have ſaid before look more credible, and themſelves leſs partial. But the honeſt and faithful hiſtorian contemns all ſuch low and mean arts; he conſiders things as they are in themſelves, and relates them as he finds them, without prejudice or affection.

ART. II. The SUBJECT or ARGUMENT of Hiſtory.

82 Subject of hiſtory.

THE *ſubject* in general is facts, together with ſuch things as are either connected with them, or may at leaſt be requiſite to ſet them in a juſt and proper light. But although the principal deſign of hiſtory be to acquaint us with facts, yet all facts do not merit the regard of an hiſtorian; but ſuch only as may be thought of uſe and ſervice for the conduct of human life. Nor is it allowable for him, like the poet, to form the plan and ſcheme of his work as he pleaſes. His buſineſs is to report things as he finds them, without any colouring or diſguiſe to make them more pleaſing and palatable to his reader, which would be to convert his hiſtory into a novel. Indeed, ſome hiſtories afford more pleaſure and entertainment than others, from the nature of the things of which they conſiſt; and it may be eſteemed the happineſs of an hiſtorian to meet with ſuch a ſubject, but it is not his fault if it be otherwiſe. Thus Herodotus begins his hiſtory with ſhowing, that the barbarians gave the firſt occaſion to the wars between them and the Greeks, and ends it with an account of the puniſhment which, after ſome ages, they ſuffered from the Greeks on that account. Such a relation muſt not only be very agreeable to his countrymen the Grecians, for whoſe ſake it was written; but likewiſe very inſtructive, by informing them of the juſtice of Providence in puniſhing public injuries in this world, wherein ſocieties, as ſuch, are only capable of puniſhment. And therefore thoſe examples might be of uſe to caution them againſt the like practices. On the contrary, Thucydides begins his hiſtory with the unhappy ſtate of his countrymen the Athenians; and in the courſe of it plainly intimates, that they were the cauſe of the calamitous war between them and the Lacedemonians. Whereas, had he been more inclined to pleaſe and gratify his countrymen than to write the truth, he might have ſet things in ſuch a light as to have made their enemies appear the aggreſſors. But he ſcorned to court applauſe at the expence of truth and juſtice, and has ſet a noble example of integrity to all future hiſtorians. But as all actions do not merit a place in hiſtory, it requires no ſmall judgement in an hiſtorian to ſelect ſuch only as are proper. Cicero obſerves very juſtly, that hiſtory "is converſant in great and memorable actions." For this reaſon, an hiſtorian ſhould always keep poſterity in view; and relate nothing which may not, upon ſome account or other, be worth the notice of after-ages. To deſcend to trivial and minute matters, ſuch as frequently occur in the common affairs of life, is below the dignity of hiſtory. Such writers ought rather to be deemed journaliſts than hiſtorians, who have no view or expectation that their works ſhould ſurvive them. But the ſkilful hiſtorian is fired with a more noble ambition. His deſign is to acquaint ſucceeding ages with what remarkable occurrences happened in the world before them; to do juſtice to the memory of great and virtuous men; and at the ſame time to perpetuate his own. Pliny the younger has ſome fine reflections upon this head, in a letter to a friend. "You adviſe me (ſays he) to write an hiſtory; and not you only, for many others have done the ſame, and I am myſelf inclined to it. Not that I believe myſelf qualified for it, which would be raſh to think till I have tried it; but becauſe I eſteem it a generous action not to ſuffer thoſe to be forgotten, whoſe memory ought to be eternized; and to perpetuate the names of others, together with one's own. For there is nothing I am ſo deſirous or ambitious of, as to be remembered hereafter; which is a thing worthy of a man, eſpecially of one who, conſcious of no guilt, has nothing to fear from poſterity. Therefore I am thinking day and night by what means, as Virgil ſays,

———My name
To raiſe aloft:

That would ſuffice me; for it is above my wiſh to add with him,

———and wing my flight to fame.
But oh!

However, this is enough, and what hiſtory alone ſeems to promiſe." *Lib.* v. *ep.* 8. This was Pliny's opinion with regard to the uſe and advantage of hiſtory; the ſubjects of which are generally matters of weight and importance. And therefore, when a prudent hiſtorian thinks it convenient to take notice of things in themſelves leſs conſiderable, he either does it with brevity, or for ſome apparent reaſon, or accounts for it by ſome juſt apology. So Dion Caſſius, when he has mentioned ſome things of leſs moment in the life of Commodus (as indeed that emperor's life was chiefly filled up with cruelty and folly), makes this excuſe for himſelf: "I would not have it thought that I deſcend below the gravity of hiſtory in writing theſe things: For, as they were the actions of an emperor, and I was preſent and ſaw them all, and both heard and converſed with him, I did not think it proper to omit them." He ſeems to think thoſe actions, when performed by an emperor, might be worth recording, which, if done by a perſon of inferior rank, would ſcarce have deſerved notice. Nor does he appear to have judged amiſs, if we conſider what an influence the conduct and behaviour of princes, even in the common circumſtances of life, have upon all beneath them; which may ſometimes render them not unworthy the regard of an hiſtorian, as examples either for imitation or caution.

85 Different kinds of hiſtory.

But although facts in general are the proper ſubject of hiſtory, yet they may be differently conſidered with regard to the extent of them, as they relate either to particular perſons or communities of men. And from this conſideration hiſtory has been diſtinguiſhed into three ſorts, viz. *biography*, *particular* and *general hiſtory*. The lives of ſingle perſons is called *biography*. By *particular hiſtory* is meant that of particular ſtates, whether for a ſhorter or longer ſpace of time. And *general hiſtory* contains an account of ſeveral ſtates exiſting together in the ſame period of time.

1. The ſubjects of *biography* are the lives either of public or private perſons; for many uſeful obſervations in the conduct of human life may be made from juſt accounts of thoſe who have been eminent and beneficial to the world in either ſtation. Nay, the lives of vicious perſons are not without their uſe, as warnings to others, by obſerving the fatal conſequences which ſooner or later generally follow ſuch practices. But, for thoſe who expoſed their lives, or otherwiſe employed their time and labour, for the ſervice of their fellow-creatures, it ſeems but a juſt debt that their memories ſhould be perpetuated after them, and poſterity acquainted with their benefactors. The expectation of this was no ſmall incentive to virtue in the Pagan world. And perhaps every one, upon due reflection, will be convinced how natural this paſſion is to mankind in general. And it was for this reaſon, probably, that Virgil places not only his heroes, but alſo the inventors of uſeful arts and ſciences, and other perſons of diſtinguiſhed merit, in the Elyſian Fields, where he thus deſcribes them:

Here patriots live, who, for their country's good,
In fighting fields were prodigal of blood:

Prieſts of unblemiſh'd lives here make abode,
And poets worthy their inſpiring god;
And ſearching wits of more mechanic parts,
Who grac'd their age with new invented arts;
Thoſe who to worth their bounty did extend,
And thoſe who knew that bounty to commend;
The heads of theſe with holy fillets bound,
And all their temples were with garland's crown'd.
ÆNEID, l. vi. v. 66.

In the lives of public perſons, their public characters are principally, but not ſolely, to be regarded. The world is inquiſitive to know the conduct of princes and other great men, as well in private as in public. And both, as has been ſaid, may be of ſervice, conſidering the influence of their examples. But to be over-inquiſitive in ſearching into the weakneſſes and infirmities of the greateſt and beſt of men, is, to ſay no more of it, but a needleſs curioſity. In the writers of this kind, Plutarch is juſtly allowed to excel.

But it has been a matter of diſpute among the learned, whether any one ought to write his own hiſtory. It may be pleaded in favour of this, that no one can be ſo much maſter of the ſubject as the perſon himſelf: and beſides, there are many inſtances, both ancient and modern, to juſtify ſuch a conduct. But on the other hand it muſt be owned, that there are many inconveniences that attend it; ſome of which are mentioned by Cicero. "If (ſays he) there is any thing commendable, perſons are obliged to ſpeak of themſelves with greater modeſty, and to omit what is blameable in others. Beſides, what is ſaid is not ſo ſoon credited, and has leſs authority; and after all, many will not ſtick to cenſure it." And Pliny ſays very well to the ſame purpoſe, "Thoſe who proclaim their own virtues, are thought not ſo much to proclaim them becauſe they did them, as to have done them that they might proclaim them. So that which would have appeared great if told by another, is loſt when related by the party himſelf. For when men cannot deny the fact, they reflect upon the vanity of its author. Wherefore, if you do things not worth mentioning, the actions themſelves are blamed; and if the things you do are commendable, you are blamed for mentioning them." Theſe reflections will be generally allowed to be very juſt; and yet conſidering how natural it is for men to love themſelves, and to be inclined in their own favour, it ſeems to be a very difficult taſk for any one to write an impartial hiſtory of his own actions. There is ſcarce any treatiſe of this kind that is more celebrated than Cæſar's Commentaries. And yet Suetonius tells us, that "Aſinius Pollio (who lived at that time) thought they were neither written with due care nor integrity: that Cæſar was often too credulous in his accounts of what was done by other perſons; and miſrepreſented his own actions, either deſignedly, or through forgetfulneſs: and therefore he ſuppoſes he would have reviſed and corrected them." However, at ſome times it may doubtleſs be juſtifiable for a perſon to be his own hiſtorian. Plutarch mentions two caſes wherein it is allowable for a man to commend himſelf, and be the publiſher of his own merits. Theſe are, when the doing of it may be of conſiderable advantage either to himſelf or others. It is indeed leſs invidious for other perſons to undertake the province. And eſpecially for a perſon to talk or write of his own virtues, at a time when vice and a general corruption of manners prevails, let what he ſays be ever ſo true, it will be apt at leaſt to be taken as a reflection upon others. "Anciently (ſays Tacitus), many wrote their own lives, rather as a teſtimony of their conduct, than from pride." Upon which he makes this judicious remark: "That the more virtue abounds, the ſooner the report of it is credited." But the ancient writers had a way of taking off the reader's attention from themſelves in recording their own actions, and ſo rendered what they ſaid leſs invidious; and that was, by ſpeaking of themſelves in the third perſon, and not in the firſt. Thus Cæſar never ſays, "*I* did," or, "*I* ſaid, this or that;" but always, "*Cæſar* did, or ſaid, ſo and ſo." Why the moderns have not more choſen to follow them in this, we know not, ſince it ſeems leſs exceptionable.

Ad Fam. lib. v. *ep.* 12.

Lib. viii. *ep.* 1.

2. In a continued hiſtory of *particular* ſtates, ſome account may be given of their original, and founders; the nature of their ſoil, and ſituation; what advantages they have for their ſupport or improvement, either within themſelves, by foreign traffic, or conqueſts; with the form of their government. Then notice ſhould be taken of the methods by which they increaſed in wealth or power, till they gradually advanced to their higheſt pitch of grandeur; whether by their virtue, the goodneſs of their conſtitution, trade, induſtry, wars, or whatever cauſe. After this the reaſons of their declenſions ſhould be ſhewn; what were the vices that principally occaſioned it (for that is generally the caſe); whether avarice, ambition, luxury, diſcord, cruelty, or ſeveral of theſe in conjunction. And laſtly, where that has been their unhappy fate, how they received their final ruin and ſubverſion. Moſt of theſe things Livy had in view when he wrote his hiſtory of the Roman ſtate, as he acquaints his readers in the preface. "The accounts (ſays he) of what happened either before or while the city was building, conſiſting rather of poetical fables than any certain records of facts, I ſhall neither aſſert nor confute them. Let antiquity be allowed to make the origin of their cities more venerable, by uniting things human and divine. But if any nation may be ſuffered to fetch their origion from the gods, ſuch is the military glory of the Romans, that when they repreſent Mars as the father of their founder, other nations may as eaſily acquieſce in this as they do in their government. But I lay no great ſtreſs upon theſe things, and others of the like nature, whatever may be thought of them. What I am deſirous every one ſhould carefully attend to, are our lives and manners: by what men, and what arts, civil and military, the empire was both acquired and enlarged: then let him obſerve, how our manners gradually declined with our diſcipline; afterwards grew worſe and worſe; and at length ſo far degenerated, that at preſent we can neither bear with our vices nor ſuffer them to be remedied. This is the chief benefit and advantage to be reaped from hiſtory, to fetch inſtruction from eminent examples of both kinds; in order to imitate the one, which will be of uſe both to yourſelf and your country, and avoid the other, which are equally baſe in their riſe and event." Thus far Livy. And how

how well he has executed this deſign muſt be acknowledged by all who will be at the pains to peruſe his work.

3. But as a particular hiſtory conſiſts of a number of facts relating to the ſame ſtate, ſuitably connected and laid together in a proper ſeries; ſo a *general* hiſtory is made up of ſeveral particular hiſtories, whoſe ſeparate tranſactions within the ſame period of time, or part of it, ſhould be ſo diſtinctly related as to cauſe no confuſion. Such was the hiſtory of Diodorus Siculus, which contained an account of moſt of the eminent ſtates and kingdoms in the world, though far the greateſt part of it is now unhappily loſt Of the ſame nature is the hiſtory of Herodotus, though not ſo extenſive; to whom we are eſpecially indebted for the Perſian affairs. And to this kind may likewiſe be referred Juſtin's hiſtory, though it be only the epitome of a larger work written by another hand. The rules proper for conducting ſuch hiſtories are much the ſame as thoſe abovementioned concerning particular hiſtories; excepting what relates to the *order*, of which we ſhall have occaſion to ſpeak hereafter.

But the hiſtories both of particular ſtates and thoſe which are more general frequently contain only the affairs of ſome ſhort period of time. Thus the hiſtory of the Peloponneſian war, written by Thucydides, compriſes only what was done in the firſt twenty years of that war, which laſted ſeven years longer than his account reaches; though indeed the reaſon of that might be, becauſe Thucydides died before the war was finiſhed, otherwiſe he would very probably have continued his hiſtory to the concluſion of it. But the hiſtory of the war between the Romans and king Jugurtha of Africa, given us by Salluſt, as alſo Cæſar's hiſtories of the Gallic and civil wars, are all confined within a much leſs number of years than that of Thucydides. Nay, ſometimes one ſingle tranſaction is thought ſufficient to furniſh out a hiſtory. Such was the conſpiracy of Catiline to ſubvert the Roman ſtate, written likewiſe by Salluſt. As to more general hiſtories, Xenophon's hiſtory of Greece may be eſteemed as ſuch; which in order to time ſucceeds that of Thucydides, and contains the affairs of forty-eight years. And Polybius called his a *general hiſtory*; which, though it principally contained the Roman affairs, yet took in the moſt remarkable tranſactions of ſeveral other ſtates, for the ſpace of fifty-three years: though it has met with the ſame hard fate as that of Diodorus Siculus, ſo that only the firſt five books out of forty, of which it conſiſted at firſt, now remain entire. And to mention no more, the celebrated hiſtory of Thuanus is another inſtance of this ſort, in which the principal tranſactions of Europe for about 60 years, chiefly in the 16th century, are deſcribed with that judgment and fidelity, and in a manner ſo accurate and beautiful, that he has been thought ſcarcely inferior to any of the ancient hiſtorians. Now, in ſuch hiſtories as theſe, to go farther back than is neceſſary to ſet the ſubject in a juſt light, ſeems as improper as it is unneceſſary.

The general ſubject or argument of hiſtory, in its ſeveral branches, may be reduced to theſe four heads; *narration*, *reflections*, *ſpeeches*, and *digreſſions*.

86
Of narration.

I. By *narration* is meant a deſcription of facts or actions, with ſuch things as are neceſſarily connected with them; namely, perſons, time, place, deſign, and event.

As to *actions* themſelves, it is the buſineſs of the hiſtorian to acquaint his readers with the manner in which they were performed; what meaſures were concerted on all ſides, and how they were conducted, whether with vigilance, courage, prudence, and caution, or the contrary, according to the nature of the action; as likewiſe, if any unforeſeen accidents fell out, by which the deſigned meaſures were either promoted or broken. All actions may be referred to two ſorts, military and civil. And as war ariſes from injuſtice and injuries received on one ſide or the other, it is fit the reader ſhould be informed who were the aggreſſors. For though war is never to be deſired, yet it is ſometimes neceſſary. In the deſcription of battles, regard ſhould be had equally to both parties; the number of forces, conduct of the generals, in what manner they engaged, what turns and chances happened in the engagement, either from accidents, courage, or ſtratagem, and how it iſſued. The like circumſtances ſhould all be obſerved in ſieges and other actions. But the moſt agreeable ſcene of hiſtory ariſes from a ſtate of peace. Here the writer acquaints us with the conſtitution of ſtates, the nature of their laws, the manners and cuſtoms of the inhabitants, the advantages of concord and unanimity, with the diſadvantages of contention and diſcord; the invention of arts and ſciences, in what manner they were improved and cultivated, and by whom; with many other things, both pleaſant and profitable in the conduct of life.

As to *perſons*, the characters of all theſe ſhould be deſcribed who act any conſiderable part in an hiſtory. This excites the curioſity of the reader, and makes him more attentive to what is ſaid of them; as every one is more inquiſitive to hear what relates to others in proportion to his knowledge of them. And it will likewiſe be of uſe to obſerve, how their actions agree with their characters, and what were the effects of their different qualifications and abilities.

The circumſtances of *time* and *place* are carefully to be regarded by an hiſtorian, without which his accounts of facts will be frequently very lame and imperfect. And therefore chronology and geography ſeem not improperly to have been called *the two eyes of hiſtory*. Beſides, they very much aſſiſt the memory: for it is much eaſier to remember any thing ſaid to be done at ſuch a time, and in ſuch a place, than if only related in general; nay, the remembrance of theſe often recalls thoſe things to mind which otherwiſe had been obliterated. By time is meant not only the year of any particular era or period; but likewiſe the ſeaſon, as ſummer or winter; and the age of particular perſons. For it is oftentimes from hence that we are principally enabled to make a juſt eſtimate of facts. Thus Cicero commends Pompey for undertaking and finiſhing the Piratic war at a ſeaſon of the year when other generals would not have thought it ſafe to venture out at ſea. This double danger, as well from the weather as the enemy, conſidering the neceſſity of the caſe, heightens the glory of the action; ſince to have done the ſame thing in ſummer would not have been an equal proof of the courage and

Pro Leg. Man. c. 12.

and intrepidity of the general. And there is nothing more ſurpriſing in the conqueſts of Alexander than that he ſhould ſubdue ſo large a part of the world by the time he was little more than 30 years old; an age at which few other generals have been much diſtinguiſhed. Had we not known this, a conſiderable part of his character had been loſt.

The like advantages ariſe from the other circumſtances of place. And therefore in marches, battles, and other military actions, the hiſtorian ſhould take notice of the nature of the country, the paſſes, rivers, diſtances of places, ſituation of the armies, and ſtrength of the towns either by nature or art; from which the reader may the better form a judgment of the difficulties and greatneſs of any enterpriſe. Cæſar is generally very particular in theſe things, and ſeems to have thought it highly requiſite in order to give his readers a juſt idea of his actions. The deſcriptions of countries, cities, and rivers, are likewiſe both uſeful and pleaſant; and help us to judge of the probability of what is related concerning the temper and genius of the inhabitants, their arts, traffic, wealth, power, or whatever elſe is remarkable among them.

But an accurate hiſtorian goes yet further, and conſiders the *cauſes* of actions, and what were the *deſigns* and views of thoſe perſons who were principally concerned in them. Some, as Polybius has well obſerved, are apt to confound the beginning of actions with their ſprings and cauſes, which ought to be carefully ſeparated. For the cauſes are often very remote, and to be looked for at a conſiderable diſtance from the actions themſelves. Thus, as he tells us, ſome have repreſented Hannibal's beſieging Saguntum in Spain, and paſſing the Ebro, contrary to a former agreement between the Romans and Carthaginians, as cauſes of the ſecond Punic war. But theſe were only the beginnings of it. The true cauſes were the jealouſies and fears of the Carthaginians from the growing power of the Romans; and Hannibal's inveterate hatred to them, with which he had been impreſſed from his infancy. For his father, whom he ſucceeded in the command of the Carthaginian army, had obliged him, when but nine years old, to take a moſt ſolemn oath upon an altar never to be reconciled to the Romans: and therefore he was no ſooner at the head of the army, than he took the firſt opportunity to break with them. Again, the true ſprings and cauſes of actions are to be diſtinguiſhed from ſuch as are only feigned and pretended. For generally the worſe deſigns men have in view, the more ſolicitous they are to cover them with ſpecious pretences. It is the hiſtorian's buſineſs, therefore, to lay open and expoſe to view theſe arts of politicians. So, as the ſame judicious hiſtorian remarks, we are not to imagine Alexander's carrying over his army into Aſia to have been the cauſe of the war between him and the Perſians. That had its being long before. The Grecians had formerly two armies in Aſia, one under Xenophon and the other commanded by Ageſilaus. Now the Aſiatics did not venture to oppoſe or moleſt either of theſe armies in their march. This made king Philip, Alexander's father, who was an ambitious prince, and aſpired after univerſal monarchy, think it might be a practicable thing to make a conqueſt of Aſia. Accordingly, he kept it in his view, and made preparations for it; but did not live to execute it. That was left for his ſon. But as king Philip could not have done this without firſt bringing the other ſtates of Greece into it, his pretence to them was only to avenge the injuries they had all ſuffered from the Perſians; though the real deſign was an univerſal government, both over them and the Perſians, as appeared afterwards by the event. But in order to our being well aſſured of a perſon's real deſigns, and to make the accounts of them more credible, it is proper we ſhould be acquainted with his diſpoſition, manners, way of life, virtues, or vices; that by comparing his actions with theſe, we may ſee how far they agree and ſuit each other. For this reaſon Salluſt is ſo particular in his deſcription of Catiline, and Livy of Hannibal; by which it appears credible, that the one was capable of entering into ſuch a conſpiracy againſt his country, and the other of performing ſuch great things as are related concerning him. But as the cauſes of actions lie in the dark, and unknown, a prudent hiſtorian will not trouble himſelf or his readers with vain and trifling conjectures unleſs ſomething very probable offers itſelf.

Laſtly, an hiſtorian ſhould relate the *iſſue* and *event* of the actions he deſcribes. This is undoubtedly the moſt uſeful part of hiſtory; ſince the greateſt advantage ariſing from it is to teach us experience from what has happened in the world before us. When we learn from the examples of others the happy effects of wiſdom, prudence, integrity, and other virtues, it naturally excites us to an imitation of them, and to purſue the ſame meaſures in our own conduct. And, on the contrary, by perceiving the unhappy conſequences which have followed from violence, deceit, raſhneſs, or the like vices, we are deterred from ſuch practices. But ſince the wiſeſt and moſt prudent meaſures do not always meet with the deſired ſucceſs, and many croſs accidents may happen to fruſtrate the beſt concerted deſigns; when we meet with inſtances of this nature, it prepares us for the like events, and keeps us from too great a confidence in our own ſchemes. However, as this is not commonly the caſe, but in the ordinary courſe of human affairs like cauſes uſually produce like effects; the numerous examples of the happy conſequences of virtue and wiſdom recorded in hiſtory are ſufficient to determine us in the choice of our meaſures, and to encourage us to hope for an anſwerable ſucceſs, though we cannot be certain we ſhall in no inſtance meet with a diſappointment. And therefore Polybius very juſtly obſerves, that "he who takes from hiſtory the cauſes, manner, and end of actions, and omits to take notice whether the event was anſwerable to the means made uſe of, leaves nothing in it but a bare amuſement, without any benefit or inſtruction." Theſe, then, are the ſeveral things neceſſary to be attended to in hiſtorical narrations; but the proper diſpoſition of them muſt be left to the ſkill and prudence of the writer.

87 Of reflections.

II. *Reflections* made by the writers. Some have condemned theſe, as having a tendency to bias the reader; who ſhould be left to draw ſuch concluſions from the accounts of facts as he ſees proper. But ſince all readers are not capable of doing this for themſelves, what diſadvantage is it for the author to ſuggeſt to them ſuch obſervations as may aſſiſt them to make the beſt uſe of what they read? And if the philoſopher is allowed to draw ſuch inferences from his precepts as he thinks juſt and proper, why has not the hiſtorian an equal right to make reflections upon the facts he relates? The reader is equally at liberty to judge for himſelf in both caſes, without danger of being prejudiced. And therefore we find, that the beſt hiſtorians have allowed themſelves this liberty. It would be eaſy to prove this by a large number of inſtances, but one or two here may ſuffice. When Salluſt has given a very diſtinct account of the deſigns of Catiline, and of the whole ſcheme of the conſpiracy, he concludes it with this reflection: "All that time the empire of the Romans ſeems to me to have been in a very unhappy ſtate. For when they had extended their conqueſts through the whole world from eaſt to weſt, and enjoyed both peace and plenty, which mankind eſteem their greateſt happineſs; ſome perſons were obſtinately bent upon their own ruin, and that of their country. For notwithſtanding two decrees were publiſhed by the ſenate, not one out of ſo great a multitude was prevailed with, by the rewards that were offered, either to diſcover the conſpiracy or to leave the army of Cataline. So deſperate a diſeaſe, and as it were infection, had ſeized the minds of moſt people!" And as it is a very handſome obſervation that Livy makes upon the ill-conduct of Hannibal in quartering his army in Capua after the battle of Cannæ; by which means they loſt their martial vigour through luxury and eaſe. "Thoſe (ſays he) who are ſkilled in military affairs reckon this a greater fault in the general, than his not marching his army immediately to Rome after his victory at Cannæ; for ſuch a delay might have ſeemed only to defer the victory, but this ill ſtep deprived him of the power to gain it." The modeſty of the hiſtorian in this paſſage is worth remarking, in that he does not repreſent this as his own private opinion, and by that means undertake to cenſure the conduct of ſo great a general as Hannibal was, but as the ſenſe of thoſe who were ſkilled in ſuch affairs. However, an hiſtorian ſhould be brief in ſuch remarks; and conſider, that although he does not exceed his province by applauding virtue, expreſſing a juſt indignation againſt vice, and interpoſing his judgment upon the nature and conſequences of the facts he relates; yet there ought to be a difference between his reflections and the encomiums or declamations of an orator.

Bell. Catil. c. 37.

Lib. xxiii. *c.* 18.

88
Of ſpeeches

III. *Speeches* inſerted by hiſtorians. Theſe are of two ſorts, oblique and direct. The former are ſuch as the hiſtorian recites in his own perſon, and not in that of the ſpeaker. Of this kind is that of Hannibal in Juſtin; by which he endeavours to perſuade king Antiochus to carry the ſeat of the war againſt the Romans into Italy. It runs thus: "Having deſired liberty to ſpeak (he ſaid), none of the preſent counſels and deſigns pleaſed him; nor did he approve of Greece for the ſeat of the war, which might be managed in Italy to greater advantage: becauſe it was impoſſible to conquer the Romans but by their own arms, or to ſubdue Italy but by its own forces; ſince both the nature of thoſe men, and of that war, was different from all others. In other wars, it was of great importance to gain an advantage of place or time, to ravage the countries and plunder the towns; but though you gain ſome advantage over the Romans, or defeat them, you muſt ſtill fight with them when beaten. Wherefore, ſhould any one engage with them in Italy, it was poſſible for him to conquer them by their own power, ſtrength, and arms, as he himſelf had done; but ſhould he attempt it out of Italy, the ſource of their power, he would be as much deceived, as if he endeavoured to alter the courſe of a river, not at the fountain-head, but where its ſtreams were largeſt and deepeſt. This was his judgment in private, and what he had offered as his advice, and now repeated in the preſence of his friends; that all might know in what manner a war ought to be carried on againſt the Romans, who were invincible abroad, but might be conquered at home. For they might ſooner be driven out of their city than their empire, and from Italy than their provinces; having been taken by the Gauls, and almoſt ſubdued by himſelf. That he was never defeated till he withdrew out of their country; but upon his return to Carthage, the fortune of the war was changed with the place." He ſeems to intimate by this ſpeech, that the Romans were like ſome fierce and impetuous animals, which are no otherwiſe to be ſubdued than by wounding them in ſome vital part. In ſpeeches related after this manner, we are not neceſſarily to ſuppoſe the hiſtorian gives us the very words in which they were at firſt delivered, but only the ſenſe. But in direct ſpeeches, the perſon himſelf is introduced as addreſſing his audience; and therefore the words as well as the ſenſe are to be ſuited to his character. Such is the ſpeech of Eumenes, one of Alexander's captains and ſucceſſors, made to his ſoldiers when they had traiterouſly bound him in chains in order to deliver him up to his enemy Antigonus, as we have it in the ſame writer. "You ſee, ſoldiers (ſays he), the habits and ornaments of your general, which have not been put upon me by mine enemies; that would afford me ſome comfort: it is by you, that of a conqueror I am become conquered, and of a general a captive; though you have ſworn to be faithful to me four times within the ſpace of a year. But I omit that, ſince reflections do not become perſons in calamity. One thing I intreat, that, if Antigonus muſt have my life, you would let me die among you. For it no way concerns him how or where I ſuffer, and I ſhall eſcape an ignominious death. If you grant me this, I free you from your oath, with which you have been ſo often engaged to me. Or, if ſhame reſtrains you from offering violence to me at my requeſt, give me a ſword, and ſuffer your general to do that for you without the obligation of an oath which you have ſworn to do for your general."

Lib. xxxi, *c.* 5.

Lib. xiv. *c.* 4.

But this likewiſe is a matter in which critics have been divided in their ſentiments; whether any, or what kind, of ſpeeches ought to be allowed in hiſtory. Some have thought all ſpeeches ſhould be excluded: and the reaſon given for that opinion is this; that it breaks the thread of the diſcourſe, and interrupts the reader, when he is deſirous to come to the end of an action, and know how it iſſued. This is true, indeed, when ſpeeches are either very long or too frequent; but otherwiſe they are not only entertaining, but likewiſe inſtructive. For it is of ſervice to know the ſprings and reaſons of actions; and theſe are frequently opened and explained in the ſpeeches of thoſe by whom they were performed. Others therefore have not been againſt all ſpeeches in general, but only direct ones. And this was the opinion of Trogus Pompeius, as Juſtin informs us, though he did not think fit to follow him in that opinion, when he abridged him, as we have ſeen already by the ſpeech of king Eumenes. The reaſon offered againſt direct ſpeeches is, becauſe they are not true; and truth is the foundation of all hiſtory, from which it never ought to depart. Such ſpeeches, therefore, are ſaid to weaken the credit of the writer; ſince he who will tell us that another perſon ſpoke ſuch things which he does not know that he ever did ſpeak, and in ſuch language as he could not uſe, may take the ſame liberty in repreſenting his actions. Thus, for example, when Livy gives us the ſpeeches of Romulus, the Sabine women, Brutus, and others, in the firſt ages of the Roman ſtate, both the things themſelves are imaginary, and the language wholly diſagreeable to the times in which thoſe perſons lived. Accordingly we find, that when ſeveral hiſtorians relate ſome particular ſpeech of the ſame perſon, they widely differ both in the ſubject-matter and expreſſions. So the ſpeech of Veturia, by which ſhe diſſuaded her ſon Coriolanus from beſieging Rome, when he came againſt it with an army of Volſcians to avenge the injuries he had received, is very differently related by Livy, Dionyſius of Halicarnaſſus, and Plutarch. Such fictitious ſpeeches therefore are judged more fit for poets, who are allowed a greater liberty to indulge their fancy than hiſtorians. And if any direct ſpeeches are to be inſerted, they ſhould be ſuch only as were really ſpoken by the perſons to whom they are aſcribed, where any ſuch have been preſerved. Theſe have been the ſentiments of ſome critics both ancient and modern. However, there is ſcarce an ancient hiſtorian now extant, either Greek or Latin, who has not ſome ſpeeches, more or leſs, in his works; and thoſe not only oblique, but alſo direct. They ſeem to have thought it a neceſſary ornament to their writings: and even where the true ſpeeches might be come at, have choſen rather to give them in their own words; in order, probably, to preſerve an equality in the ſtyle. Since therefore the beſt and moſt faithful hiſtorians have generally taken this liberty, we are to diſtinguiſh between their accounts of facts and their ſpeeches. In the former, where nothing appears to the contrary, we are to ſuppoſe they adhere to truth, according to the beſt information they could get; but in the latter, that their view is only to acquaint us with the cauſes and ſprings of actions, which they choſe to do in the form of ſpeeches, as a method moſt ornamental to the work, and entertaining to the reader; though the beſt hiſtorians are cautious of inſerting ſpeeches, but where they are very proper, and upon ſome ſolemn and weighty occaſions. Thucydides is ſaid to have been the firſt who brought complete and finiſhed ſpeeches into hiſtory, thoſe of Herodotus being but ſhort and imperfect. And though Dionyſius of Halicarnaſſus, in his cenſure upon Thucydides, ſeems then to have diſliked that part of his conduct; yet he afterwards thought fit to imitate it in his *Antiquities of Rome*, where we find many not only oblique, but alſo direct ſpeeches.

Lib. xxxviii *c.* 3.

Lib. ii, c. 40.
Ant. Rom. lib. viii. *c.* 46,
In Coriolano.

See Voſſ. *Ars. Hiſt. c.* 20.

What has been ſaid of ſpeeches, may likewiſe be underſtood of letters, which we ſometimes meet with in hiſtories; as that of Alexander to Darius in Q. Curtius, thoſe of Tiberius and Druſus in Tacitus, and many others. Some letters are wholly fictitious; and in others perhaps the hiſtorian repreſents the ſubſtance of what was really ſaid, but gives it his own dreſs. Thus we find that ſhort letter of Lentulus to Catiline at the time of his conſpiracy differently related by Cicero and Salluſt The reaſon of which ſeems to be this: That as Cicero recited it publicly to the people of Rome in his third oration againſt Catiline, it is reaſonable to imagine he did it in the very words of the letter, which he had by him; whereas Salluſt, as an hiſtorian might think it ſufficient to give the ſenſe of it in his own words.

Lib. iv. *c.* 1.
Ann. lib. i. 73. iii. 56, 59.

IV. *Digreſſions.* Theſe, if rightly managed, afford the reader both delight and profit. Like ſpeeches, they ſhould neither be too long nor frequent; leſt they interrupt the courſe of the hiſtory, and divert the reader from the main deſign of the work. But now and then to introduce a beautiful deſcription, or ſome remarkable incident, which may give light to the ſubject, is ſo far from an interruption, that it is rather a relief to the reader, and excites him to go on with greater pleaſure and attention. See further on this head, ORATORY, nº 37.

ART. III. Of ORDER.

89. Of order.

SINCE moſt hiſtories conſiſt of an introduction and the body of the work, in each of which ſome order is requiſite, we ſhall ſpeak to them ſeparately.

1. The deſign of the introduction is the ſame here as in orations. For the hiſtorian propoſes three things by his introduction, which may be called its parts; to give his reader ſome general view of the ſubject, to engage his attention, and to poſſeſs him with a candid opinion of himſelf and his performance. Some have thought this laſt unneceſſary for an hiſtorian. But if we conſider how differently mankind are apt to judge of the ſame perſons and actions, it ſeems as requiſite for an hiſtorian to be well eſteemed as an orator. And therefore we find ſome of the beſt hiſtorians have not omitted this part. Livy's introduction has been very much applauded by the learned, as a maſter-piece in its kind. It begins with an account of his deſign. "Whether (ſays he) it may anſwer any valuable end for me to write the hiſtory of the Roman affairs from the beginning of the city, I neither am certain, nor if I was would I venture to declare it." Soon after he endeavours to prepare the reader's attention, by repreſenting the grandeur and uſefulneſs of the ſubject in the following words: "Either I am prejudiced in favour of my ſubject, or there never was any ſtate greater, more virtuous, and fruitful of good examples, or in which avarice and luxury had a later admittance, or poverty and thriftineſs were either more highly or longer eſteemed, they always coveting leſs the leſs they enjoyed." And then he preſently proceeds to ingratiate himſelf with his readers, and gain their favourable opinion: "Although my name is obſcure in ſo great a number of writers, yet it is a comfort that they cloud it by their fame and character. But I ſhall gain this advantage by my labour, that I ſhall be diverted for a time from the proſpect of thoſe evils which the age has ſeen for ſo many years; while my mind is wholly intent upon former times, free from all that care which gives the writer an uneaſineſs, though it cannot

"bias him againſt the truth." In this paſſage we ſee he endeavours to gain the good eſteem of his readers from two very powerful motives, modeſty and a ſtrict regard to truth. It may ſcarce ſeem neceſſary to obſerve, that thoſe introductions are eſteemed the beſt which are moſt natural; that is, ſuch as are taken from the ſubject matter of the hiſtory itſelf, and cloſely connected with it. Such are thoſe of Herodotus, Thucydides, Livy, Tacitus, and others. And therefore Salluſt is greatly blamed by Quintilian on the account of his introductions, which are ſo general, that they might ſuit other hiſtories as well as thoſe to which they are prefixed. Introductions ſhould likewiſe be proportioned to the length of the work. We meet with ſome few hiſtories, in which the writers immediately enter upon their ſubject, without any introduction; as Xenophon in his Expedition of the younger Cyrus, and Cæſar in his Commentaries of the Gallic and Civil Wars. But the latter does not profeſs to write a juſt hiſtory; and therefore left himſelf more at liberty, as well in this reſpect as in ſome others.

2. But order is principally to be regarded in the body of the work. And this may be managed two ways; either by attending to the time in a chronological ſeries, or the different nature and circumſtances of the things contained in the hiſtory. However, as theſe two methods do not equally ſuit all ſubjects, we ſhall a little conſider to what kind of hiſtories each of them ſeems more properly adapted. All hiſtory then, as we have obſerved already, may be reduced to three ſorts; *biography*, the *hiſtory of particular ſtates*, and the *general hiſtory of ſeveral ſtates* exiſting at the ſame time.

In biography, or the lives of particular perſons, moſt writers follow the order of time; though ſome reduce them to certain general heads, as their virtues and vices, or their public and private character. Plutarch and Cornelius Nepos have taken the former method, and Suetonius the latter.

As to the hiſtory of particular ſtates, the order of time is generally beſt, as being moſt natural and eaſy. And therefore it has uſually been obſerved by the beſt hiſtorians, as Thucydides, Livy, and others. Tacitus, indeed, wrote two diſtinct works; one of which he called *Annals*, and the other *Hiſtories*. And as in both he has kept to the order of time, critics have been at a loſs to aſſign any other reaſon for theſe different titles, unleſs that in the former work he confines himſelf more cloſely to the facts themſelves, and does not treat ſo largely upon the cauſes, manner, or event of them, as he has done in the latter. And even in the circumſtances of facts, there is a certain order proper to be obſerved, for rendering the account more plain and intelligible. Thus, for inſtance, in the diſcription of a battle or ſiege, the time ſhould firſt be known, then the chief perſon or perſons who conducted it, then the number of forces, and other requiſites, afterwards the nature of the place, then the action itſelf, and laſtly the event. But ſometimes it is neceſſary to add the time in which ſeveral of the other circumſtances happened, eſpecially in actions of any conſiderable length. Where the order of theſe circumſtances is confuſed, it perplexes the account, and renders it both leſs entertaining to the reader, and more difficult to remember.

In a general hiſtory, the order of time cannot always be preſerved; though, where the actions of different communities have reſpect to one as the principal, they ſhould all, as far as poſſible, be referred to the tranſactions of that ſtate. But even here the ſeveral affairs of thoſe different ſtates ought to be related ſeparately, which will neceſſarily occaſion the anticipating ſome things, and poſtponing others, ſo that they cannot all ſtand in the order of time in which they were performed. However, Velleius Paterculus ſays very juſtly with regard to this ſubject, "That every entire action, placed together in one view, is much better apprehended than if divided by different times." In this caſe, therefore, for better preſerving the chronology, it is uſual with hiſtorians, when they have finiſhed any particular narrative, in paſſing to the next, to expreſs the time by ſome ſhort and plain tranſition; and ſometimes to apologiſe for themſelves, by aſſigning the reaſons of their conduct. So Polybius, whoſe hiſtory is of this kind, ſays concerning himſelf: "As in writing the actions of each year, in the order of time, I endeavour to repreſent the affairs of the ſame nation together in one ſummary view, it is plain that inconvenience muſt of courſe attend this way of writing." Curtius profeſſes only to write the actions of Alexander king of Macedon; but his hiſtory contains in it the principal affairs of the greateſt ſtates in the world during that period. Now although, in the courſe of thoſe tranſactions, the war between Archelaus governor of Macedonia, and Agis king of Sparta, happened before the battle of Alexander at Arbela; yet the hiſtorian not only relates that battle firſt, but carries on the account of Alexander's affairs in Aſia to the death of Darius without interruption: for which he gives this reaſon: "If I ſhould relate the affairs of Alexander, which happened in the mean time, either in Greece, or Illyrium and Thrace, each in their proper order and time, I muſt interrupt the affairs of Aſia; which it is much better to repreſent together in one continued ſeries as they fell out, to the flight and death of Darius." Such anachroniſms, therefore, are nothing more than what neceſſarily ariſe ſometimes from the nature of the ſubject: As every thing, the more complex it is, and containing under it a great number of parts, is more difficult to be digeſted in a regular order. But in an hiſtory compoſed of ſeveral ſtates, whoſe affairs are independent of one another, the actions of each nation muſt neceſſarily be ſeparated, in order to repreſent them in a juſt view, and prevent confuſion. This is the method which Herodotus has taken, as likewiſe Diodorus Siculus and Juſtin. Now both the pleaſure and benefit which ſuch hiſtories afford, ariſe from obſerving the conduct of each ſtate ſeparately in the courſe of their affairs, and then comparing one with the other. And as the order of time muſt frequently be interrupted, it is not unuſual to continue the chronology at proper diſtances in relating the affairs of each nation; which preſerves an unity in the whole, and connects it in one conſiſtent body.

The diviſion of hiſtories into books was deſigned only for the better diſtinction of the ſubject and eaſe of the reader. And the dividing theſe books again into chapters, is rather a practice of later editors (founded, as they have thought, on the ſame reaſons),

ſons), than countenanced by the example of ancient writers.

ART. IV. Of STYLE.

9 Of ſtyle.

An hiſtorical ſtyle is ſaid to be of a middle nature, between that of a poet and an orator, differing from both not only in the ornamental parts, but likewiſe in the common idioms and forms of expreſſion.

Cicero obſerves, that "nothing is more agreeable in hiſtory than brevity of expreſſion, joined with purity and perſpicuity." Purity indeed is not peculiar to hiſtory, but yet it is abſolutely neceſſary; for no one will ever think him fit to write an hiſtory who is not maſter of the language in which he writes: and therefore when Albinus had written an hiſtory of the Roman affairs in Greek, and apologized for any ſlips or improprieties that might be found in the language upon the account of his being a Roman, Cato called him a trifler, for chooſing to do that which, after he had done it, he was obliged to aſk pardon for doing. Nor is perſpicuity leſs requiſite in an hiſtorical ſtyle. The nature of the ſubject plainly directs to this. For as hiſtory conſiſt principally in narration, clearneſs and perſpicuity is nowhere more neceſſary than in a relation of facts. But theſe two properties are to be accompanied with brevity, ſince nothing is more diſagreeable than a long and tedious narrative. And in this reſpect an hiſtorical ſtyle differs both from that of poetry and oratory. For the poet frequently heightens and enlarges his deſcriptions of facts, by dwelling upon every circumſtance, placing it in different views, and embelliſhing it with the fineſt ornaments of wit and language, to render his images more agreeable; and the orator often does the like, with a deſign to ſtrike the paſſions. But ſuch colouring is not the buſineſs of an hiſtorian, who aims at nothing more than a juſt and faithful repreſentation of what he relates, in a way beſt ſuited to its nature, and in ſuch language as is moſt proper to ſet it in a plain and eaſy light.

De Clar. Orat. c. 75.

Gell. Lib. xi. c. 8.

Again, Cicero, treating of an hiſtorical ſtyle, ſays: "It ought to be fluent, ſmooth, and even, free from that harſhneſs and poignancy which is uſual at the bar." The properties here mentioned diſtinguiſh this ſtyle from that of judicial diſcourſes, in which the orator often finds it neceſſary to vary his manner of ſpeaking, in order to anſwer different views, either of purſuing an argument, preſſing an adverſary, addreſſing a judge, or recommending the merits of his cauſe. This occaſions an inequality in his ſtyle, while he ſpeaks ſometimes directly, at other times by way of queſtion, and intermixes ſhort and conciſe expreſſions with round and flowing periods. But the hiſtorian has no neceſſity for ſuch variations in his ſtyle. It is his province to eſpouſe no party, to have neither friend nor foe, but to appear wholly diſintereſted and indifferent to all; and therefore his language ſhould be ſmooth and equal in his relations of perſons and their actions.

De Orat. lib. ii. c. 15. 20.

But further: Dionyſius makes "decency a principal virtue in an hiſtorian;" which he explains by ſaying, that "he ought to preſerve the characters of the perſons and dignity of the actions of which he treats." And to do this it ſeems neceſſary that an hiſtorical ſtyle ſhould be animated with a good degree of life and vigour; without which neither the characters of eminent perſons, nor their remarkable actions, which make up the main buſineſs of hiſtory, can be duly repreſented: for even things in themſelves great and excellent, if related in a cold and lifeleſs manner, often do not affect us in a degree ſuitable to their dignity and importance. And this ſeems particularly neceſſary in ſpeeches, in order to repreſent what every one ſays, according to his different country, age, temper, and ſtation of life, in the ſame manner we may ſuppoſe he either really did, or would have ſpoken himſelf on that occaſion. Beſides, there are ſome ſcenes of action which require very pathetic and moving language to repreſent them agreeably to their nature. And in deſcriptions, the moſt beautiful tropes and lively figures are often neceſſary to ſet the ideas of things in a proper light. From whence it appears, that painting and imagery makes up no ſmall part of the hiſtorian's province, though his colours are not ſo ſtrong and glittering as thoſe either of the poet or orator. He ought therefore to be well acquainted with the manners of men and the nature of the paſſions, ſince he is often obliged to deſcribe both; in the former of which Herodotus excels, and Thucydides in the latter, as Dionyſius has obſerved.

Epiſt. ad Cn. Pompeium.

Now from theſe ſeveral properties laid down by ancient writers, as requiſite for an hiſtorical ſtyle, it ſeems upon the whole to agree beſt with the middle character. And this will further appear, by what they ſay relating to the ornamental parts of ſtyle; namely, compoſition and dignity. As to the former of theſe, which reſpects the ſtructure of ſentences, and the ſeveral parts of them, Demetrius remarks, that "An hiſtorical period ought neither to riſe very high, nor ſink very low, but to preſerve a medium." This ſimplicity (he ſays) "becomes the gravity and credit of hiſtory; and diſtinguiſhes it from oratory on the one hand, and dialogue on the other." His meaning is, that hiſtorical periods ſhould neither be ſo full and ſonorous as is frequent in oratory; nor yet ſo ſhort and flat, as in dialogue: the former of which, as he ſays, require a ſtrong voice to pronounce them; and the latter have ſcarce the appearance of periods. So that, according to this judicious writer, the periods beſt ſuited for hiſtory are thoſe which, being of a moderate length, will admit of a juſt riſe and cadency, and may be pronounced with eaſe. And Dionyſius tells us, that "Hiſtory ſhould flow ſmooth and even, every where conſiſtent with itſelf, without roughneſs or chaſms in the ſound." This relates to the harmony of periods, which ariſes from ſuch a poſition of the words, as renders the ſound pleaſant and agreeable, and, as he thinks, ought to be attended to in hiſtory. And as to dignity, which reſpects the uſe of tropes and figures, the ſame author ſays, that "Hiſtory ſhould be embelliſhed with ſuch figures as are neither vehement nor carry in them the appearance of art." This is agreeable to what Cicero obſerves, in comparing Xenophon and Caliſthenes, two Greek hiſtorians. "Xenophon the Socratic (ſays he) was the firſt philoſopher, and after him Caliſthenes, the ſcholar of Ariſtotle, who wrote an hiſtory: the latter almoſt like a rhetorician; but the ſtyle of the former is more moderate, and has not the force of an orator, leſs vehement perhaps, but in my opinion more ſweet

De Orat. lib. ii. c. 14.

"and pleaſant." The difference between theſe two writers, with regard to their ſtyle, conſiſted chiefly in the choice of their figures; which in Xenophon were more gentle and moderate, and therefore in the judgement of Cicero more agreeable to hiſtory. Now theſe ſeveral properties relating to the ornaments of language, as well as thoſe before mentioned, which by ancient writers have been thought requiſite for hiſtory, are all ſuited to the middle ſtyle, as we have elſewhere ſhown at large. See ORATORY, nº 99—121.

But notwithſtanding this general account of the ſeveral properties which conſtitute an hiſtorical ſtyle, it admits of conſiderable varieties from the different nature and dignity of the ſubject. The lives of particular perſons do not require that ſtrength and majeſty of expreſſion, nor all thoſe ornaments of language, as an hiſtory of the Roman empire. And accordingly we find the ſtyle of Nepos and Suetonius very different from that of Livy. The former is ſmooth and eaſy, ſcarce riſing above the low character; but the latter often approaches near to the ſublime. And other hiſtorians again have kept a medium between theſe. Upon the whole, therefore, we may conclude, that the middle ſtyle is the proper character for hiſtory; though hiſtorians may ſometimes ſink into the low character, and at other times riſe to the grandeur and magnificence of the ſublime, from the different nature of their ſubject, or ſome particular parts of it. For that is to be eſteemed the proper character of any writing which in the general beſt ſuits it. And this diſtinction may help us in ſome meaſure to reconcile the ſentiments of writers upon this head, who ſeem to attribute different characters to an hiſtorical ſtyle, or at leaſt to judge where the truth lies; ſince a variety of ſtyle is not only requiſite in different ſubjects, but likewiſe in different parts of the ſame work.

HISTORY of Nature, or *Natural Hiſtory*. See *NATURAL Hiſtory*.

HISTRIO, in the ancient drama, ſignified an actor or comedian; but more eſpecially a pantomime, who exhibited his part by geſtures and dancing. Livy informs us, that the hiſtriones were brought to Rome from Etruria, in the year of the city 391, (Dec. 1. lib. 7.)

HISTRIX. See HYSTRIX.

HITCHING, a large and populous town of Hartfordſhire in England, ſituated near a large wood called *Hitchwood*. The manor was the ancient demeſne of the kings of England, as it continues at this day; and it has been the dower of ſeveral of their queens. The town is reckoned the ſecond in the county for number of ſtreets, houſes, and inhabitants. It was formerly famous for the ſtaple commodities of the kingdom, and divers merchants of the ſtaple of Calais reſided here, ſince which that trade is loſt. The inhabitants now make large quantities of malt; and the market is one of the greateſt in England for wheat. W. Long. 0. 20. N. Lat. 51. 55.

HITHE, a town of Kent in England, 70 miles from London. It is one of the cinque ports; and had formerly five pariſhes, but by the choaking up of its harbour and other accidents is now reduced to one. In the reign of Henry IV. numbers of its inhabitants were cut off by a peſtilence, 200 of their houſes conſumed by fire, and five of their ſhips ſunk at ſea, with the loſs of 100 men; ſo that the people were going to abandon the town, had not the king by his charter generouſly releaſed to them, for five turns next following, their ſervice of five ſhips of 100 men and five horſe, which they were to have furniſhed out and kept at their own charge in the king's wars for 15 days. It was firſt incorporated by the name of *barons of the town and port of Hith*; but the government was afterwards changed. It was incorporated by Queen Elizabeth with the name of the mayor, jurats, and commonalty of the town and port of Hith, who with the freemen elect the members of parliament. The mayor is choſen yearly on Candlemas-day. Here is a market on Saturdays, and fairs in July and December. From hence to Canterbury is a paved Roman military-way, called *Stoney-Street*; and at a little diſtance from hence are the remains of the walls of a caſtle, which included 10 acres. There is a remarkable pile of dry bones in the town, 28 feet long, 6 broad, and 8 high; they are kept in a vault under the church in as good order as books in a library, conſiſting of ſeveral thouſand heads, arms, legs, thigh-bones, &c. ſome very gigantic, and appear by an inſcription to be the remains of the Danes and Britons killed in a battle near this place, before the Norman conqueſt. From hence to Boulogne is reckoned the ſhorteſt cut to France. E. Long. 1. 7. N. Lat. 51. 6.

HITTITES, the deſcendants of Heth. See HETH.

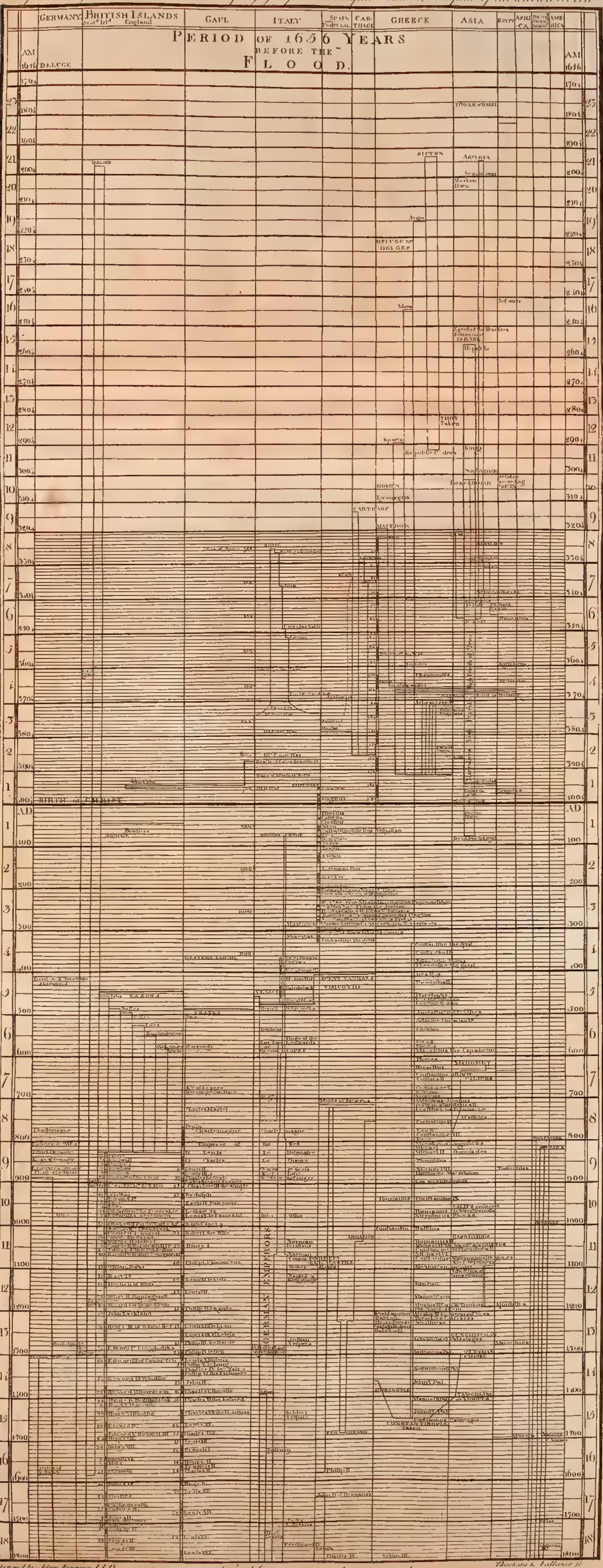
HIVE, in country affairs, a convenient receptacle for bees. See APIS and BEE.

HIVITES, a people deſcended from Canaan. They dwelt at firſt in the country which was afterwards poſſeſſed by the Caphtorims, or Philiſtines. There were Hivites likewiſe at Shechem and Gibeon, and conſequently in the centre of the promiſed land; for the inhabitants of Shechem and the Gibeonites were Hivites, (Joſhua xi. 19. Geneſis xxxiv. 2.) Laſtly, there were ſome beyond Jordan, at the foot of mount Hermon (Joſhua xi. 3.) Bochart is of opinion, that Cadmus, who carried a colony of Phœnicians into Greece, was an Hivite. His name *Cadmus*, comes from the Hebrew *Kedem*, "the eaſt," becauſe he was of the eaſtern part of the land of Canaan. The name of his wife *Hermione*, comes from mount Hermon, at the foot whereof the Hivites had their dwelling. The metamorphoſis of Cadmus's companions into ſerpents is grounded on the ſignification of the name *Hivites*, which in Phœnician ſignifies "ſerpents."

HOACHE, in natural hiſtory, a kind of earth approaching to the nature of chalk, but harder, and feeling like ſoap; whence ſome think that it is either the ſame with the ſoap-rock of Cornwall, or very like it. The Chineſe diſſolve it in water till the liquor is of the conſiſtence of cream, and then varniſh their China-ware with it.

HISTORICAL CHART,

Representing at one View the rise and progreſs of the Principal States & Empires of the known World



Designed by Adam Ferguson LL.D.

Thackara & Vallance sc.

Independence of the United States of America commenced July 4th 1776

HOADLEY (Benjamin), ſucceſſively biſhop of Bangor, Hereford, Saliſbury, and Wincheſter, was born in 1676. His firſt preferment in the church was the rectory of St Peter le Poor, and the lectureſhip of St Mildred's in the Poultry. In the year 1706, he publiſhed ſome Remarks on the late biſhop Atterbury's ſermon at the funeral of Mr Bennet, in which Dr Atterbury had, in the opinion of Mr Hoadley, laid down ſome dangerous propoſitions. Two years after, Mr Hoadley again entered the liſts againſt this formidable antagoniſt, and in his *exceptions* againſt a ſermon publiſhed by Dr Atterbury, intitled "The Power of Charity to cover Sin," he attacked the doctor with his uſual ſtrength of reaſoning and diſpaſſionate inquiry. In 1709, another diſpute aroſe between theſe two learned combatants, concerning the doctrine of non-reſiſtance, occaſioned by a performance of Mr Hoadley's, intitled "The Meaſures of Obedience;" ſome poſitions in which Dr Atterbury endeavoured to confute in his elegant Latin ſermon, preached that year before the London clergy. In this debate Mr Hoadley ſignalized himſelf in ſo eminent a degree, that the honourable houſe of commons gave him a particular mark of their regard, by repreſenting, in an addreſs to the queen, the ſignal ſervices he had done to the cauſe of civil and religious liberty.—The principles, however, which he eſpouſed being repugnant to the general temper of thoſe times, drew on him the virulence of a party; yet it was at this period (1710, when, as he himſelf expreſſed it, *fury ſeemed to be let looſe upon him)* that the late Mrs Howland preſented him to the rectory of Streatham in Surry, unaſked, unapplied to, and without his either having ſeen her or been ſeen by her. Soon after the acceſſion of King George I. Mr Hoadley was conſecrated to the ſee of Bangor; and, 1717, having broached ſome opinions concerning the nature of Chriſt's kingdom, &c. he again became the object of popular clamour. At this juncture he was diſtinguiſhed by another particular mark of the royal regard, by means of which the convocation was ſucceſſively prorogued, and it was not permitted to ſit, nor do any buſineſs, till that reſentment was entirely ſubſided. In 1721 he was tranſlated to Hereford; and from thence, in 1723, to Saliſbury. In 1734, he was tranſlated to Wincheſter (on the demiſe of Dr Willis), and publiſhed his *Plain Account of the Sacrament:* a performance which ſerved as a butt for his adverſaries to ſhoot at, yet impartially owns it to be clear, rational, and manly, wrote with great candour and judgment, and ſuited to the capacity of every ſerious and conſiderate inquirer after truth.—His latter days were embittered by a moſt vile inſtance of fraud and ingratitude. The biſhop took a French prieſt, who pretended to abjure his religion, under his protection, with no other recommendation than that of his neceſſities; in return for which act of humanity, the prieſt found an opportunity of getting the biſhop's name written by his own hand, and, cauſing a note of ſome thouſand pounds to be placed before it, offered it in payment. But the biſhop denying it to be his, it was brought before a court of juſtice, and was there found to be a groſs impoſition. The ungrateful villain had now recourſe to a pamphlet, in which he charged the biſhop with being a drunkard; and alleged that he had the note of him when he was in liquor. To this calumny the biſhop made a full and nervous anſwer; in which he expoſed the man's falſehood, and ſolemnly averred that he was never drunk in his whole life. The world with becoming ardour embraced his defence, and he had the happineſs to find himſelf perfectly acquitted even of any ſuſpicion of ſuch a charge. As a writer, he poſſeſſed uncommon abilities. His ſermons (publiſhed in 1754 and 1755) are eſteemed inferior to few writings in the Engliſh language, for plainneſs and perſpicuity, energy and ſtrength of reaſoning, and a free and maſterly manner. In private life, he was naturally facetious, eaſy, and complying; fond of company, yet would frequently leave it for the purpoſes of ſtudy or devotion. He was every where happy; and particularly in his own family, where he took all opportunities of inſtructing by his influence and example. He died in 1761, aged 85. Beſides the works already mentioned, he wrote, 1. Terms of Acceptance, 8vo. 2. Reaſonableneſs of Conformity. 3. On the Sacrament. His tracts and pamphlets are extremely numerous; and the reader may ſee a complete catalogue of them in his life inſerted in the ſupplement to the Biographia Britannica.

HOADLEY (Benjamin, M. D.), ſon of the former was born in 1706; and ſtudied at Bennet college Cambridge, under the tuition of Dr Herring afterwards archbiſhop of Canterbury. He took his degree in phyſic; and particularly applying himſelf to mathematical and philoſophical ſtudies, was, when very young, admitted a member of the royal ſociety. He was made regiſter of Hereford while his father filled that ſee, and was early appointed phyſician to his majeſty's houſehold, but died at his houſe in Chelſea in 1757. He wrote, 1. Three Letters on the organs of reſpiration, 4to. 2. The Suſpicious Huſband, a comedy. 3. Obſervations on a ſeries of electrical experiments; and, 4, *Oratio anniverſaria, in Theatro Col. Med. Londin. ex Harvei inſtituto habita die Octob.* 1742.

HOAI-NGAN-FOU, a city of China, in the province of Hiang-nan. According to Groſier, it is ſituated in a marſh, and is encloſed by a triple wall. As the ground on which it ſtands is lower than the bed of the canal, the inhabitants live in continual dread of an inundation. The ſuburbs extend to the diſtance of a league on each ſide of the canal, and form at their extremity a kind of port on the river Hoang-ho. This place is very populous, and every thing in it announces an active and briſk trade. One of thoſe great mandarins who have the inſpection of the canals and navigation, and who are alſo obliged to ſupply the court with neceſſary proviſions, reſides here. This city has eleven other under its juriſdiction; two of which are of the ſecond, and nine of the third claſs.

HOAR-HOUND, in botany. See MARUBIUM.

HOARSENESS, in medicine, a diminution of the voice, commonly attended with a preternatural aſperity and roughneſs thereof. The parts affected are the aſpera arteria and larynx. For its cauſes and cure, ſee (the *Index* ſubjoined to) MEDICINE.

HOBAL, in mythology, an idol of the ancient Arabs, the worſhip of which at Mecca was deſtroyed by Mahomet.

HOBBES (Thomas), a famous writer, born at Malmſbury in 1588, was the ſon of a clergyman. He completed his ſtudies at Oxford, and was afterwards governor to the eldeſt ſon of William Cavendiſh earl of Devonſhire. He travelled through France and Italy with that young nobleman, and at length applied himſelf entirely to the ſtudy of polite literature. He tranſlated Thucydides into Engliſh; and publiſhed his tranſlations in 1628, in order to ſhow his countrymen, from the Athenian hiſtory, the diſorders and confuſions of a democratical government. In 1626 his patron the earl of Devonſhire died; and in 1628 his ſon died alſo; which loſs affected Mr Hobbes to ſuch a degree, that he very willingly accepted an offer made him of going abroad a ſecond time with the ſon of Sir Gervaſe Clifton; whom he accordingly accompanied into France, and ſtaid there ſome time. But while he continued there, he was ſolicited to return to England, and to reſume his concern for the hopes of that family to whom he had attached himſelf ſo early, and to which he owed ſo many and ſo great obligations. In 1631, the counteſs dowager of Devonſhire deſired to put the young earl under his care, who was then about the age of 13. This was very ſuitable to Mr Hobbes's inclinations, who diſcharged that truſt with great fidelity and diligence. In 1643, he republiſhed his tranſlation of Thucydides, and prefixed to it a dedication to that young nobleman, in which he gives a large character of his father, and repreſents in the ſtrongeſt terms the obligations he was under to that illuſtrious family. The ſame year he accompanied his noble pupil to Paris, where he applied his vacant hours to the ſtudy of natural philoſophy, and more eſpecially to the perfect underſtanding of mechaniſm, and the cauſes of animal motion. He had frequent converſations upon theſe ſubjects with father Martin Merſenne; a man deſervedly famous, and who kept up a correſpondence with almoſt all the learned in Europe. From Paris he attended his pupil into Italy, where at Piſa he became known to that great aſtronomer Galileo Galilei, who communicated to him his notions very freely; and after having ſeen all that was remarkable in that country, he returned with the earl of Devonſhire into England. Afterwards, foreſeeing the civil wars, he went to ſeek a retreat at Paris; where by the good offices of his friend father Merſenne, he became known to the famous Renatus des Cartes, and afterwards held a correſpondence with him upon ſeveral mathematical ſubjects, as appears from the letters of Mr Hobbes publiſhed in the works of Des Cartes. But when this philoſopher printed afterwards his Meditations, wherein he attempted to eſtabliſh points of the higheſt conſequence from innate ideas, Mr Hobbes took the liberty of diſſenting from him; as did alſo the French king's mathematical profeſſor, the illuſtrious Peter Gaſſendi, with whom Mr Hobbes contracted a very cloſe friendſhip, which was not interrupted till the death of the former. In 1642, Mr Hobbes printed a few copies of his famous book *De Cive*, which, in proportion as it became known, raiſed him many adverſaries, who charged him with inſtilling principles which had a dangerous tendency. Among many illuſtrious perſons who, upon ſhipwreck of the royal cauſe, retired to France for ſafety, was Sir Charles Cavendiſh, brother to the duke of Newcaſtle: and this gentleman, being ſkilled in every branch of the mathematics, proved a conſtant friend and patron to Mr Hobbes; who, by embarking in 1645 in a controverſy about ſquaring the circle, was grown ſo famous for it, that in 1647 he was recommended to inſtruct Charles prince of Wales, afterwards king Charles II. in that kind of learning. His care in the diſcharge of this office gained him the eſteem of that prince in a very high degree: and tho' he afterwards withdrew his public favour from Mr Hobbes on account of his writings, yet he always retained a ſenſe of the ſervices he had done him; ſhowed him various marks of his favour after he was reſtored to his dominions; and, as ſome ſay, had his picture hanging in his cloſet. This year alſo was printed in Holland, by the care of M. Sorbiere, a ſecond and more complete edition of his book *De Cive*; to which are prefixed two Latin letters to the editor, the one by Mr Gaſſendi, the other by father Merſenne, in commendation of it; and in 1650 was publiſhed at London a ſmall treatiſe of Mr Hobbes's, intitled *Human Nature*; and another, *De corpore politico*, or "Of the elements of the law."

All this time Mr Hobbes had been digeſting with great care and pains his religious, political, and moral principles, into a complete ſyſtem, which he called the *Leviathan*, and which was printed in Engliſh at London in 1650 and 1651. After the publication of his Leviathan he returned to England, and paſſed the ſummer commonly at his patron the earl of Devonſhire's ſeat in Derbyſhire, and ſome of his winters in town, where he had for his intimate friends ſome of the greateſt men of the age. In 1660, upon the reſtoration, he quitted the country, and came up to London, where he obtained from the king aſſurance of protection, and had an annual penſion of L. 100 ſettled upon him out of the privy purſe. Yet this did not render him entirely ſafe: for, in 1666, his *Leviathan* and his treatiſe *De Cive* were cenſured by parliament; which alarmed him very much, as did alſo the bringing in of a bill into the houſe of commons to puniſh atheiſm and profaneneſs. When this ſtorm was a little blown over, he began to think of procuring a beautiful edition of his pieces that were in Latin; but finding this impracticable in England, he cauſed it to be undertaken abroad, where they were publiſhed in quarto in 1668, from the preſs of John Bleau. In 1669, he was viſited by Coſmo de Medicis, then prince, afterwards duke of Tuſcany, who gave him ample marks of his eſteem and reſpect; and having received his picture, and a complete collection of his writings cauſed them to be repoſited, the former among his curioſities, the latter in his noble library at Florence. The like viſits he received from foreign ambaſſadors and other ſtrangers of diſtinction; who were curious to ſee a perſon whoſe ſingular opinions and numerous writings had made ſo much noiſe all over Europe. In 1672, he wrote his own life in Latin verſe, when, as he obſerves, he had completed his 84th year: and, in 1674, he publiſhed in Engliſh verſe four books of Homer's Odyſſey; which was ſo well received, that it encouraged him to undertake the whole Iliad and Odyſſey, which he likewiſe performed and publiſhed in 1675. About this time he took his leave of London, and went to ſpend the remainder of his days in Derbyſhire, where, however, he did not remain inactive, notwithſtanding his advanced age; but publiſhed from time to time ſeveral pieces, to be found in the collection of his works. He died in 1679, aged 92.

As to his character and manners, they are thus deſcribed by Dr White Kennet, in his Memoirs of the Cavendiſh family. "The earl of Devonſhire (ſays he) for his whole life entertained Mr Hobbes in his family, as his old tutor, rather than as his friend or confident. He let him live under his roof in eaſe and plenty, and in his own way, without making uſe of him in any public, or ſo much as domeſtic affairs. He would often expreſs an abhorrence of ſome of his principles in policy and religion; and both he and his lady would frequently put off the mention of his name, and ſay, 'He was a humoriſt, and nobody could account for him.' There is a tradition in the family, of the manners and cuſtoms of Mr Hobbes, ſomewhat obſervable. His profeſſed rule of health was to dedicate the morning to his exerciſe, and the afternoon to his ſtudies. And therefore, at his firſt riſing, he walked out, and climbed any hill within his reach; or if the weather was not dry, he fatigued himſelf within doors by ſome exerciſe or other, to be in a ſweat: recommending that practice upon this opinion, that an old man had more moiſture than heat, and therefore by ſuch motion heat was to be acquired and moiſture expelled. After this, he took a comfortable breakfaſt; and then went round the lodgings to wait upon the earl, the counteſs, and the children, and any conſiderable ſtrangers, paying ſome ſhort addreſſes to all of them. He kept theſe rounds till about 12 o'clock, when he had a little dinner provided for him, which he eat always by himſelf without ceremony. Soon after dinner he retired to his ſtudy, and had his candle with 10 or 12 pipes of tobacco laid by him; then ſhutting his door, he fell to ſmoking, thinking, and writing, for ſeveral hours. He retained a friend or two at court, and eſpecially the lord Arlington, to protect him if occaſion ſhould require. He uſed to ſay, that it was lawful to make uſe of ill inſtruments to do ourſelves good: 'If I were caſt (ſays he) into a deep pit, and the devil ſhould put down his cloven foot, I would take hold of it to be drawn out by it.' After the reſtoration, he watched all opportunities to ingratiate himſelf with the king and his prime miniſters: and looked upon his penſion to be more valuable, as an earneſt of favour and protection, than upon any other account. His future courſe of life was to be free from danger. He could not endure to be left in an empty houſe. Whenever the earl removed, he would go along with him, even to his laſt ſtage, from Chatſworth to Hardwick. When he was in a very weak condition, he dared not to be left behind, but made his way upon a feather-bed in a coach, though he ſurvived the journey but a few days. He could not bear any diſcourſe of death, and ſeemed to caſt off all thoughts of it: he delighted to reckon upon longer life. The winter before he died, he made a warm coat, which he ſaid muſt laſt him three years, and then he would have ſuch another. In his laſt ſickneſs his frequent queſtions were, Whether his diſeaſe was curable? and when intimations were given, that he might have eaſe, but no remedy, he uſed this expreſſion, 'I ſhould be glad to find a hole to creep out of the world at;' which are reported to have been his laſt ſenſible words; and his lying ſome days following in a ſilent ſtupefaction, did ſeem owing to his mind more than to his body."

The reverend Mr Granger obſerves, that Hobbes's ſtyle is incomparably better than that of any other writer in the reign of Charles I. and was for its uncommon ſtrength and purity ſcarcely equalled in the ſucceeding reign. "He has in tranſlation (ſays he) done Thucydides as much juſtice as he has done injury to Homer; but he looked upon himſelf as born for much greater things than treading in the ſteps of his predeceſſors. He was for ſtriking out new paths in ſcience, government, and religion; and for removing the land-marks of former ages. His ethics have a ſtrong tendency to corrupt our morals, and his politics to deſtroy that liberty which is the birthright of every human creature. He is commonly repreſented as a ſceptic in religion, and a dogmatiſt in philoſophy; but he was a dogmatiſt in both. The main principles of his Leviathan are as little founded in moral or evangelical truths, as the rules he has lad down for ſquaring the circle are in mathematical demonſtration. His book on human nature is eſteemed the beſt of his works."

HOBBIMA (Minderhout), an eminent landſcape painter, was born about the year 1611 at Antwerp; but the maſter from whom he received his inſtruction is not known. He ſtudied entirely after nature, ſketching every ſcene that afforded him pleaſure, and his choice was exceedingly pictureſque. His grounds are always agreeably broken, and he was particularly fond of deſcribing ſlopes diverſified with ſhrubs, plants, or trees, which conducted the eye to ſome building, ruin, grove, or piece of water, and frequently to a delicate remote diſtance, every object perſpectively contributing to delude our obſervation to that point. The figures which he himſelf deſigned are but indifferent; which was a defect imputable to Claude Lorraine and Gaſpar Pouſſin as well as to Hobbima; but the latter, conſcious of his inability in that reſpect, admitted but few figures into his deſigns, and thoſe he uſually placed ſomewhat removed from the immediate view at a prudent diſtance from the front line. However, moſt of his pictures were ſupplied with figures by Oſtade, Teniers, and other very famous maſters, which muſt always give them a great additional value. They are now exceedingly ſcarce, and induſtriouſly ſought for.

HOBBY, the name of a hawk called by ſome authors *ſubbuteo*. See Falco.

It is a hawk of the lure, and not of the fiſt; and is very like the ſaker, only much leſs. It makes excellent ſport with net and ſpaniels; for when the birds ſee the hobby, they dare not commit themſelves to the wing, but lie cloſe to the ground, and ſo are taken in nets.

Hobby is alſo a name formerly given to ſtrong active horſes of a middling ſize: they are reported to have been originally natives of Ireland, and were much liked and uſed. Nags anſwer the ſame deſcription as to ſize, qualities, and employments.

HOBGOBLIN is a name vulgarly applied to fairies or apparitions. Skinner calls the word *robgoblins*, and derives it from Robin Goodfellow, Hob being the nick name of Robin: but Wallis and Junius, with greater probability, derive it from *hopgoblins, empuſæ*, becauſe they are ſuppoſed to hop without moving both their feet.

HOBLERS, or Hobilers, *Hobelarii*, in ancient cuſtoms, were men who, by their tenure, were obliged to maintain a light horſe or hobby, for the certifying any invaſion towards the ſea-ſide.—The name was alſo uſed for certain Iriſh knights, who uſed to ſerve as light horſemen upon hobbies.

HOB-NAIL, a nail with a thick ſtrong head, uſed in ſhoeing a hobby or little horſe.

HOB-NOB, or Hab-nap, a cant word formed from *hap ne hap*, and denoting an event which happens at random or by mere chance.

HOBOO, a name given by the people of Otaheite, and in the neighbouring iſlands of the South Sea, to their ſuperfine cloth. It is the thinneſt and moſt finiſhed preparation of the aouta.

HOBSHEE-coffrees, a kind of Abyſſinian ſlaves very frequent in the empire of Hindoſtan. They come moſtly from a province ſubject to the Negus of Ethiopia, called Innariah, to the ſouth of his other dominions, and bordering upon Negroland in Africa; from whence they are ſelected, and a great traffic made of them over all Mogoliſtan and Perſia; but it is chiefly from the ports of Arabia and the Red Sea that they are brought. Nothing can be imagined more ſmooth or gloſſy, and perfectly black, than their ſkin; in which they far ſurpaſs the negroes on the coaſt of Guinea; and, generally ſpeaking, have not any thing of their thick lips, though otherwiſe as woolly haired as they. They are highly valued for their courage, fidelity, and ſhrewdneſs; in which they ſo far excel, as often to riſe to poſts of great honour, and are made governors of places under the title *Siddees*.

HOBSON's-choice, a vulgar proverbial expreſſion, applied to that kind of choice in which there is no alternative. It is ſaid to be derived from the name of a carrier at Cambridge, who let out hackney horſes, and obliged each cuſtomer to take in his turn that horſe which ſtood next the ſtable door.

HOCUS-POCUS, a cant expreſſion with which the exhibitors of legerdemain tricks generally preface their feats. They are thought to be derived from that arch legerdemain trick of the Romiſh prieſts converting the ſacramental bread into Deity; in which wonderful metamorphoſis the words *hoc eſt corpus* made a conſpicuous part of the ceremony, and which words may be conſidered as the probable root of our modern *hocus-pocus*.

HOD, a ſort of tray for carrying mortar, in uſe among bricklayers.

HODEGOS, a term purely Greek, οδηγος, ſignifying *guide*. The word is chiefly uſed as the title of a book compoſed by Anaſtaſius the Sinate, towards the cloſe of the fifth century; being a method of diſputing againſt the heretics, particularly the Acephali.

Mr Toland has alſo publiſhed a diſſertation under the ſame title. Its ſubject is the pillar of fire, &c. which went before the the Iſraelites as a guide in the deſart.

HODGE-PODGE. See Hotch-potch.

HODMAN, a cant term formerly uſed for a young ſcholar admitted from Weſtminſter-ſchool to be ſtudent in Chriſt-church in Oxford.

HODY (Humphry), a learned Engliſh divine, was born in 1659. At 21 years of age, he publiſhed his celebrated Diſſertation againſt Ariſtæus's hiſtory of the 70 interpreters; which was received with great applauſe by all the learned, Iſaac Voſſius excepted, who could not bear to have his opinions oppoſed by ſuch a youth. Twenty years after, he treated the ſubject more fully in his *De Bibliorum textibus originalibus, verſionibus Græcis & Latina vulgata, libri IV.* In 1689, he wrote the *Prologomena* to John Melala's Chronicle, printed at Oxford; and the year after was made chaplain to Dr Stillingfleet biſhop of Worceſter. The deprivation of the nonjuring biſhops engaged him in a controverſy with Mr Dodwell; which recommended him to archbiſhop Tillotſon, to whom, and his ſucceſſor Dr Tenniſon, he was domeſtic chaplain. In 1698 he was made regius profeſſor of the Greek tongue at Oxford, and archdeacon of Oxford in 1704. On occaſion of the controverſy about the convocation, he, in 1701, publiſhed A hiſtory of the Engliſh councils and convocations, and of the clergy's ſitting in parliament, &c. He died in 1706, leaving in MS. An account of thoſe learned Grecians who retired to Italy on the taking of Conſtantinople, &c. which was publiſhed in 1742 by Dr Jebb.

HOE, or How, a huſbandman's tool, made like a cooper's adz, to cut up weeds in gardens, fields, &c. This inſtrument is of great uſe, and ought to be much more employed than it is in hacking and clearing the ſeveral corners and patches of land in ſpare times of the year, which would be no ſmall advantage to it.

Horſe-Hoe, a large kind of hoe drawn by horſes, and uſed to ſtir the intervals in the new huſbandry, and clear the corn from weeds. See Agriculture.

HOEING, in the new huſbandry, is the breaking or dividing the ſoil by tillage while the corn or other plants are growing thereon. It differs from common tillage (which is always performed before the corn or plants are ſown or planted) in the time of performing it; and it is much more beneficial to the crops than any other tillage. This ſort of tillage is performed various ways, and by means of different inſtruments, and is deſcribed under the article Agriculture.

HOEI-tcheou, the moſt ſouthern city of the province of Kiang-nan in China, and one of the richeſt of the empire. The people are economical and temperate, but they are active and enterpriſing in trade: they boaſt of their tea, varniſh, and engravings, which are indeed the moſt eſteemed in China. It has dependent upon it ſix cities of the third claſs; the mountains which ſurround this canton contain gold, ſilver, and copper mines.

HOEMATOPUS, in ornithology; a genus of birds, of the order of grallæ. It has a long compreſſed bill, with the end cuneated; the noſtrils are linear, and the feet have only three toes. There is but one ſpecies, the oſtralegus, ſea-pie, or oyſter-catcher. They are very common on moſt of our coaſts; feeding on marine inſects, oyſters, limpets, &c. Their bills, which are compreſſed ſideways, and end obtuſely, are very fit inſtruments to inſinuate between the limpet and the rock to which theſe ſhells adhere; which they do with great dexterity to get at the fiſh. On the coaſt of France, where the tides recede ſo far as to leave the beds of oyſters bare, theſe birds feed on them, forcing the ſhells open with their bills. They keep in ſummer-time in pairs, laying their eggs on

Plate ccxxxiv.

on the bare ground: they lay four of a whitiſh-brown hue, thinly ſpotted and ſtriped with black; and when any one approaches their young, they make a loud and ſhrill noiſe. In winter they aſſemble in vaſt flocks, and are very wild. The head, neck, ſcapulars, and coverts of the wings of this bird, are of a fine black; in ſome the neck is marked with white; the wings duſky, with a broad tranſverſe band of white; the bill three inches long, and of a rich orange colour.

HOFFMAN, the name of ſeveral eminent phyſicians; of whom Maurice Hoffman, and John Maurice Hoffman his ſon practiſed at Altorf. Maurice died in 1698. leaving behind him many works; and was ſucceeded by his ſon John Maurice, who wrote as well as his father, and died in 1727, highly eſteemed by the faculty.—Frederic Hoffman, probably of the ſame family, was born at Magdeburg in 1660. The principal known circumſtances of his life are, his journey into Holland and England, where he became intimately acquainted with Paul Herman and Robert Boyle; never taking any fees, being ſupported by his annual ſtipend; his curing the emperor Charles VI. and Frederic I. king of Pruſſia of inveterate diſeaſes: to which may be added, his accurate knowledge of the nature and virtues of mineral waters. He ſurvived his 80th year; and his works, which are in great eſteem, were printed in ſix volumes folio at Geneva, in 1740.

HOFFMANISTS, in eccleſiaſtical hiſtory, denote thoſe who eſpouſed the ſentiments of Daniel Hoffmann, profeſſor of the univerſity of Helmſtadt, who, from the year 1598, maintained, that philoſophy was a mortal enemy to religion; and that what was true in philoſophy was falſe in theology. Theſe abſurd and pernicious tenets occaſioned a warm and extenſive controverſy; at length Hoffmann was compelled by Julius duke of Brunſwick to retract his invectives againſt philoſophy, and to acknowledge, in the moſt open manner, the harmony and union of ſound philoſophy with true and genuine theology.

HOG, in zoology. See Sus.

Hog, on board of a ſhip, is a ſort of flat ſcrubbing broom formed by incloſing a number of ſhort twigs of birch or ſuch wood between two pieces of plank faſtened together, and cutting off the ends of the twigs, and ſerving to ſcrape the filth from a ſhip's bottom under water, particularly in the act of boot-topping. For this purpoſe they fit to this broom a long ſtaff with two ropes; one of which is uſed to thruſt the hog under the ſhip's bottom, and the other to guide and pull it up again cloſe to the planks. This buſineſs is commonly performed in the ſhip's boat, which is confined as cloſe as poſſible to the veſſel's ſide during the operation, and ſhifted from one part of the ſide to another till the whole is completed.

Hog's Dung is by Mortimer reckoned one of the richeſt manures we are acquainted with, and the next in value to ſheep's dung; and is found to be equal in virtue to twice the quantity of any other dung except this. The ancients ſeem to have been diſpleaſed with it on account of its breeding weeds; but this is only accuſing it of being too rich, for any dung will do this when laid too thick. It is an excellent manure for paſture-grounds, and excels all other kinds of dung for trees. The farmers who uſe this dung for their lands, generally take care to ſave it, by well paving the ſtyes; and increaſe the quantity by throwing in bean-ſtalks, ſtubble, and many other things of a like nature: and, by good management of this kind, many farmers have procured 50 or 60 loads of excellent manure a-year out of a ſmall ſtye. The very beſt way of uſing this dung is by mixing it with horſe-dung; and for this reaſon it is beſt to have the ſtye near the ſtable, that the two cleanſings may be mixed in one heap, and uſed together.

They have in many parts of Staffordſhire a poor, light, ſhallow land, on which they ſow a kind of white pea: the land is neither able to bear this nor any thing elſe to advantage for their reaping; but, when the peas are ripe, they turn in as many hogs as the quantity of peaſe will fatten, ſuffering them to live at large, and to remain there day and night: in conſequence of this, the lands will produce good crops of hay for ſeveral years afterwards; or, if too poor for that, it will at worſt raiſe graſs enough to make it good paſture-ground.

Hog's Lard. See Axungia.

HOGARTH (William), a truly great and original genius, is ſaid by Dr Burn to have been the deſcendant of a family originally from Kirkby Thore, in Weſtmoreland. His father, who had been a ſchoolmaſter in the ſame county, went early to London, where he was employed as a corrector of the preſs; and appears to have been a man of ſome learning, a dictionary in Latin and Engliſh, which he compoſed for the uſe of ſchools, being ſtill exiſting in MS. He married in London; and kept a ſchool in Ship-Court, in the Old-Bailey. Our hero was born in 1697 or 1698, in the pariſh of St Martin Ludgate. The outſet of his life, however, was unpromiſing. “He was bound,” ſays Mr Walpole, to a mean engraver of arms upon plate.” Hogarth probably choſe this occupation, as it required ſome ſkill in drawing; to which his genius was particularly turned, and which he contrived aſſiduouſly to cultivate. His maſter, it ſince appears, was Mr Ellis Gamble, a ſilverſmith of eminence, who reſided in Cranbourn-ſtreet, Leiceſter-fields. In this profeſſion it is not unuſual to bind apprentices to the ſingle branch of engraving arms and cyphers on every ſpecies of metal; and in that particular department of the buſineſs young Hogarth was placed; “but, before his time was expired, he felt the impulſe of genius, and that it directed him to painting.” During his apprenticeſhip, he ſet out one Sunday, with two or three companions, on an excurſion to Highgate. The weather being hot, they went into a public houſe, where they had not been long before a quarrel aroſe between ſome perſons in the ſame room. One of the diſputants ſtruck the other on the head with a quart pot, and cut him very much. The blood running down the man's face, together with the agony of the wound, which had diſtorted his features into a moſt hideous grin, preſented Hogarth, who ſhowed himſelf thus early, “appriſed of the mode Nature had intended he ſhould purſue,” with too laughable a ſubject to be overlooked. He drew out his pencil, and produced on the ſpot one of the moſt ludicrous figures that was ever ſeen. What rendered this piece the more valuable was, that it exhibited an exact likeneſs of the man, with the portrait of his antagoniſt, and the figures in caricature of the principal perſons gathered round him.

How long he continued in obſcurity we cannot exactly learn ; but the firſt piece in which he diſtinguiſhed himſelf as a painter is ſuppoſed to have been a repreſentation of Wanſtead Aſſembly. The figures in it, we are told, were drawn from the life, and without any circumſtances of burleſque. The faces were ſaid to be extremely like, and the colouring rather better than in ſome of his late and more highly finiſhed performances. From the date of the earlieſt plate that can be aſcertained to be the work of Hogarth, it may be preſumed that he began buſineſs on his own account at leaſt as early as 1720.

His firſt employment ſeems to have been the engraving of arms and ſhop-bills. The next was to deſign and furniſh plates for bookſellers. Mr Bowles, at the Black Horſe in Cornhill, was one of his earlieſt patrons, whoſe prices were very low. His next friend in that line was Mr Philip Overton, who paid him ſomewhat better for his labour and ingenuity.

There are ſtill many family pictures by Hogarth exiſting, in the ſtyle of ſerious converſation-pieces. What the prices of his portraits were, Mr Nichols ſtrove in vain to diſcover ; but he ſuſpects they were originally very low, as the people who are beſt acquainted with them chooſe to be ſilent on that ſubject.

It happened in the early part of Hogarth's life, that a nobleman who was uncommonly ugly and deformed came to ſit to him for his picture. It was executed with a ſkill that did honour to the artiſt's abilities ; but the likeneſs was rigidly obſerved, without even the neceſſary attention to compliment or flattery. The peer diſguſted at this counterpart of his dear ſelf, never once thought of paying for a reflector that would only inſult him with his deformities. Some time was ſuffered to elapſe before the artiſt applied for his money ; but afterwards many applications were made by him (who had then no need of a banker) for payment, without ſucceſs. The painter, however, at laſt hit upon an expedient which he knew muſt alarm the nobleman's pride, and by that means anſwer his purpoſe. It was couched in the following card : "Mr Hogarth's dutiful reſpects to lord —— ; finding that he does not mean to have the picture which was drawn for him, is informed again of Mr H.'s neceſſity for the money : if, therefore, his lordſhip does not ſend for it in three days, it will be diſpoſed of, with the addition of a tail, and ſome other little appendages, to Mr Hare, the famous wild-beaſt man ; Mr H. having given that gentleman a conditional promiſe of it for an exhibition-picture on his lordſhip's refuſal." This intimation had the deſired effect. The picture was ſent home, and committed to the flames.

Mr Walpole has remarked, that if our artiſt "indulged his ſpirit of ridicule in perſonalities, it never proceeded beyond ſketches and drawings ; and wonders "that he never, without intention, delivered the very features of any identical perſon." Mr Nichols aſſures us, from unqueſtionable authority, that almoſt all the perſonages who attend the levee of the Rake were undoubted portraits ; and that in "Southwark Fair," and the "Modern Midnight Converſation," as many more were diſcoverable. While Hogarth was painting the "Rake's progreſs," he had a ſummer reſidence at Iſleworth ; and never failed to queſtion the company who came to ſee theſe pictures, if they knew for whom one or another figure was deſigned. When they gueſſed wrong, he ſet them right.

The Duke of Leeds has an original ſcene in the "Beggar's Opera," Painted by Hogarth. It is that in which Lucy and Polly are on their knees, before their reſpective fathers, to intercede for the life of the hero of the piece. All the figures are either known or ſuppoſed to be portraits. If we are not miſinformed, the late Sir Thomas Robinſon (perhaps better known by the name of Long Sir Thomas) is ſtanding in one of the ſide boxes. Macheath, unlike his ſpruce repreſentative on the preſent ſtage, is a ſlouching bully ; and Polly appears happily diſencumbered of ſuch a hoop as the daughter of Peachum within our younger memories has worn. Mr Walpole has a picture of a ſcene in the ſame piece, where Macheath is going to execution. In this alſo the likeneſſes of Walker and Miſs Fenton, afterwards dutcheſs of Bolton (the firſt and original Macheath and Polly) are preſerved. In the year 1726, when the affair of Mary Tofts, the rabbit breeder of Godalming, engaged the public attention, a few of the principal ſurgeons ſubſcribed their guinea a piece to Hogarth, for an engraving from a ludicrous ſketch he had made on that very popular ſubject. This plate, amongſt other portraits, contains that of the St Andre, then anatomiſt to the royal houſehold, and in high credit as a ſurgeon. In 1727, Hogarth agreed with Morris, an upholſterer, to furniſh him with a deſign on canvas, repreſenting the element of earth, as a pattern for tapeſtry. The work not being performed to the ſatisfaction of Morris, he refuſed to pay for it ; and our artiſt, by a ſuit at law, recovered the money.

In 1730, Mr Hogarth married the only daughter of Sir James Thornhill, by whom he had no child. This union, indeed, was a ſtolen one, and conſequently without the approbation of Sir James, who conſidering the youth of his daughter, then barely 18, and the ſlender finances of her huſband, as yet an obſcure artiſt, was not eaſily reconciled to the match. Soon after this period, however, he began his "Harlot's Progreſs" (the coffin in the laſt place is inſcribed Sept. 2. 1731) ; and was adviſed by lady Thornhill to have ſome of the ſcenes in it placed in the way of his father-in-law. Accordingly, one morning early, Mrs Hogarth undertook to convey ſeveral of them into his dining-room. When he aroſe, he inquired from whence they came ; and being told by whom they were introduced, he cried out, "Very well ; the man who can furniſh repreſentations like theſe can alſo maintain a wife without a portion." He deſigned this remark as an excuſe for keeping his purſe-ſtrings cloſe ; but ſoon after, became both reconciled and generous to the young people. An allegorical cieling by Sir James Thornhill is at the houſe of the late Mr Huggins, at Headly Park, Hants. The ſubject of it is the ſtory of Zephyrus and Flora ; and the figure of a ſatyr and ſome others were painted by Hogarth.

In 1732, Hogarth ventured to attack Mr Pope, in a plate called "The Man of Taſte ;" containing a view of the Gate of Burlington-houſe, with Pope whitewaſhing it and beſpattering the duke of Chandos's coach. This plate was intended as a ſatire on the tranſlator of Homer, Mr Kent the architect, and the earl of Burlington. It was fortunate for Hogarth that he eſcaped the laſh of the former. Either Hogarth's obſcurity at that time was his protection, or the bard was too prudent to exaſperate a painter who had already given ſuch proof of his abilities for ſatire.

Soon after his marriage, Hogarth had ſummer lodgings at South Lambeth; and being intimate with Mr Tyers, contributed to the improvement of the Spring Gardens at Vauxhall, by the hint of embelliſhing them with paintings, ſome of which were the ſuggeſtions of his own truly comic pencil. For his aſſiſtance, Mr Tyres gratefully preſented him with a gold ticket of admiſſion for himſelf and his friends,

In 1733, his genius became conſpicuouſly known. The third ſcene of his" Harlot's Progreſs,' introduced him to the notice of the great. At a board of treaſury which was held a day or two after the appearance of that print, a copy of it was ſhown by one of the lords, as containing among other excellencies, a ſtriking likeneſs of Sir John Gonſon. It gave univerſal ſatisfaction: from the treaſury each lord repaired to the print-ſhop for a copy of it, and Hogarth roſe completely into fame.

The ingenious Abbé Du Bos has often complained that no hiſtory painter of his time went through a ſeries of actions, and thus, like an hiſtorian, painted the ſucceſſive fortune of an hero from the cradle to the grave. What Du Bos wiſhed to ſee done, Hogarth performed. He lanches out his young adventurer a ſimple girl upon the town, and conducts her through all the viciſſitudes of wretchedneſs to a premature death. This was painting to the underſtanding and to the heart: none had ever before made the pencil ſubſervient to the purpoſes of morality and inſtruction: a book like this is fitted to every ſoil and every obſerver; and he that runs may read. Nor was the ſucceſs of Hogarth confined to his perſons. One of his excellencies conſiſted in what may be termed the furniture of his pieces; for as, in ſublime and hiſtorical repreſentations, the fewer trivial circumſtances are permitted to divide the ſpectator's attention from the principal figures, the greater is their force; ſo, in ſcenes copied from familiar life, a proper variety of little domeſtic images contributes to throw a degree of veriſimilitude on the whole. „ The Rake's levee-room," ſays Mr Walpole, " the nobleman's dining room, the apartments of the huſband and wife in Marriage á la Mode, the alderman's parlour, the bed-chamber, and many others, are the hiſtory of the manners of the age."

In 1745, Hogarth ſold about 20 of his capital pictures by auction; and in the ſame year acquired additional reputation by the ſix prints of " Marriage á la Mode," which may be regarded as the ground-work of a novel called " The marriage Act," by Dr Shebbear, and" of The Clandeſtine Marriage."

Soon after the peace of Aix la Chapelle, he went over to France, and was taken into cuſtody at Calais while he was drawing the gate of that town; a circumſtance which he has recorded in his picture, intitled " O the Roaſt Beef of Old England !" publiſhed March 26. 1746. He was actually carried before the governor as a ſpy, and after a very ſtrict examination commited a priſoner to Granſire, his landlord, on his promiſing that Hogarth ſhould not go out of his houſe till he was to embark for England.

In 1753, he appeared to the world in the character of an author, and publiſhed a quarto volume, intitled " The Analyſis of Beauty, written with a view of fixing the fluctuating ideas of taſte." In this performance he ſhows, by a variety of examples, that a curve is the line of beauty, and that round ſwelling figures are moſt pleaſing to the eye; and the truth of his opinion has been countenanced by ſubſequent writers on the ſubject. In this work, the leading idea of which was hieroglyphically thrown out in a frontiſpiece to his works in 1745, he acknowledges himſelf indebted to his friends for aſſiſtance, and particularly to one gentleman for his corrections and amendments of at leaſt a third part of the *wording*. This friend was Dr Benjamin Hoadley, the phyſician, who carried on the work to about the third part, Chap. IX. and then, through indiſpoſition, declined the friendly office with regret. Mr Hogarth applied to his neighbour Mr Ralph; but it was impoſſible for two ſuch perſons to agree, both alike vain and poſitive. He proceeded no farther than about a ſheet, and they then parted friends, and ſeem to have continued ſuch. The kind office of finiſhing the work, and ſuperintending the publication, was laſtly taken up by Dr Morell, who went through the remainder of the book. The preface was in like mannner corrected by the Rev. Mr Townley. The family of Hogarth rejoiced when the laſt ſheet of the " Analyſis" was printed off; as the frequent diſputes he had with his coadjutors, in the progreſs of the work, did not much harmonize his diſpoſition. The work was tranſlated into German by Mr Mylins, when in England, under the author's inſpection; and the tranſlation was printed in London, price five dollars. A new and correct edition was in 1754 propoſed for publication at Berlin, by Ch. Fr. Vok, with an explanation of Mr Hogarth's ſatirical prints, tranſlated from the French; and an Italian tranſlation was publiſhed at Leghorn in 1761.

Hogarth had one failing in common with moſt people who attain wealth and eminence without the aid of liberal education.—He affected to deſpiſe every kind of knowledge which he did not poſſeſs. Having eſtabliſhed his fame with little or no obligation to literature, he either conceived it to be needleſs, or decried it becauſe it lay out of his reach. His ſentiments, in ſhort, reſembled thoſe of Jack Cade, who pronounced ſentence on the clerk of Chatham becauſe he could write and read. Till, in evil hour, this celebrated artiſt commenced author, and was obliged to employ the friends already mentioned to correct his " Analyſis of Beauty," he did not ſeem to have diſcovered that even ſpelling was a neceſſary qualification; and yet he had ventured to ridicule the late Mr Rich's deficiency as to this particular, in a note which lies before the Rake whoſe play is refuſed while he remains in confinement for debt. Previous to the time of which we are now ſpeaking, one of our artiſt's common topics of declamation was the uſeleſſneſs of books to a man of his profeſſion. In " Beer-ſtreet," among other volumes conſigned by him to the paſtry-cook, we find Turn-bull "on Ancient Painting;" a treatiſe which Hogarth ſhould have been able to underſtand before he ventured to condemn. Garrick himſelf, however, was not more ductile to flattery. A word in praiſe of "Sigiſmunda," his favourite work, might have commanded a proof print, or forced an original ſketch out of the artiſt's hands. The following authenticated ſtory of our artiſt will alſo ſerve to ſhow how much more eaſy it is to detect ill-placed or hyperbolical adulation reſpecting others than when applied to ourſelves. Hogarth being at dinner with the great Cheſelden and ſome other company, was told that Mr John Freke, ſurgeon of St Bartholomew's-hoſpital, a few evenings before, at Dick's Coffee-houſe, had aſſerted that Greene was as eminent in compoſition as Handel. "That fellow Freke," replied Hogarth, "is always ſhooting his bolt abſurdly one way or another! Handel is a giant in muſic; Greene only a light Florimel kind of a compoſer."—"Aye," ſays our artiſt's informant; "but at the ſame time Mr Freke declared you were as good a portrait-painter as Vandyck."—"*There* he was in the right," adds Hogarth; "and ſo by G— I am, give me my time, and let me chooſe my ſubject!"

A ſpecimen of Hogarth's propenſity to merriment, on the moſt trivial occaſions, is obſervable in one of his cards requeſting the company of Dr. Arnold King to dine with him at the Mitre. Within a circle, to which a knife and fork are the ſupporters, the written part is contained. In the centre is drawn a pye, with a mitre on the top of it; and the invitation of our artiſt concludes with the following ſport on the Greek letters—to *Eta Beta Pi*. The reſt of the inſcription is not very accurately ſpelt. A quibble by Hogarth is ſurely as reſpectable as a conundrum by Swift.

In one of the early exhibitions at Spring-Gardens, a very pleaſing ſmall picture by Hogarth made its firſt appearance. It was painted for the Earl of Charlemont, in whoſe collection it remains, and was intitled "Picquet, or Virtue in Danger;" and ſhows us a young lady who during a *tête-à-tete* had juſt loſt all her money to a handſome officer of her own age. He is repreſented in the act of returning her a handful of bank bills, with the hope of exchanging them for a ſofter acquiſition and more delicate plunder. On the chimney-piece a watch caſe and a figure of Time over it, with this motto—NUNC. Hogarth, has caught his heroine during this moment of heſitation, this ſtruggle with herſelf, and has marked her feelings with uncommon ſucceſs.

In the "Miſer's feaſts." Mr Hogarth thought proper to pillory Sir Iſaac Shard, a gentleman proverbially avaricious. Hearing this, the ſon of Sir Iſaac, the late Iſaac Pacatus Shard, Eſq; a young man of ſpirit, juſt returned from his travels, called at the painter's to ſee the picture; and among the reſt, aſking the Cicerone "whether that odd figure was intended for any particular perſon;" on his replying "that it was thought to be very like one Sir Iſaac Shard," he immediately drew his ſword and ſlaſhed the canvas. Hogarth appeared inſtantly in great wrath: to whom Mr Shard calmly juſtified what he had done, ſaying "that this was a very unwarrantable licence; that he was the injured party's ſon, and that he was ready to defend any ſuit at law; which however, was never inſtituted.

About 1757, his brother-in-law, Mr Thornhill, reſigned the place of king's ſerjeant-painter in favour of Mr Hogarth.

The laſt remarkable circumſtance of his life was his conteſt with Mr Churchill. It is ſaid that both met at Weſtminſter-hall; Hogarth to take by his eye a ridiculous likeneſs of the poet, and Churchil to furniſh a deſcription of the painter. But Hogarth's print of the poet was not much eſteemed, and the poet's letter to him was but little admired. Some pretend, indeed, to ſay that it broke the painter's heart; but this we can from good authority ſay is not true. Indeed the report falls of itſelf; for we may as well ſay, that Hogarth's pencil was as efficacious as the poet's pen, ſince neither long ſurvived the conteſt.

It may be truly obſerved of Hogarth, that all his powers of delighting were reſtrained to his pencil. Having rarely been admitted into polite circles, none of his ſharp corners had been rubbed off, ſo that he continued to the laſt a groſs uncultivated man. The ſlighteſt contradiction tranſported him into rage. To ſome confidence in himſelf he was certainly intitled: for, as a comic painter, he could have claimed no honour that would not moſt readily have been allowed him; but he was at once unprincipled and variable in his political conduct and attachments. He is alſo ſaid to have beheld the riſing eminence and popularity of Sir Joſhua Reynolds with a degree of envy; and, if we are not miſinformed, frequently ſpoke with aſperity both of him and his performances. Juſtice, however, obliges us to add, that our artiſt was liberal, hoſpitable, and the moſt punctual of paymaſters; ſo that, in ſpite of the emoluments his works had procured to him, he left but an inconſiderable fortune to his widow. His plates indeed are ſuch reſources to her as may not ſpeedily be exhauſted. Some of his domeſtics had lived many years in his ſervice; a circumſtance that always reflects credit on a maſter. Of moſt of theſe he painted ſtrong likeneſſes on a canvas ſtill in Mrs Hogarth's poſſeſſion.

Of Hogarth's leſſer plates many were deſtroyed. When he wanted a piece of copper on a ſudden, he would take any from which he had already worked off ſuch a number of impreſſions, as he ſuppoſed he ſhould ſell. He then ſent it to be effaced, beat out, or otherwiſe altered to his preſent purpoſe. The plates which remained in his poſſeſſion were ſecured to Mrs Hogarth by his will dated Aug. 12. 1764, chargeable with an annuity of L. 80 to his ſiſter Anne, who ſurvived him. When, on the death of his other ſiſter, ſhe left off the buſineſs in which ſhe was engaged, he kindly took her home, and generouſly ſupported her, making her at the ſame time, uſeful in the diſpoſal of his prints. Want of tenderneſs and liberality to his relations was not among the failings of Hogarth.

The following character of Hogarth as an artiſt, is given by Mr Gilpin in his *Eſſay on Prints.* "The works of this maſter abound in true humour and ſatire, which is generally well directed: they are admirable moral leſſons, and a fund of entertainment ſuited to every taſte; a circumſtance which ſhews them to be juſt copies of nature. We may conſider them too as valuable repoſitories of the manners, cuſtoms, and dreſſes of the preſent age. What a fund of entertainment would a collection of this kind afford, drawn from every period of the hiſtory of Britain?—How far the works of Hogarth will bear a *critical examination*, may be the ſubject of a little more enquiry.

"In *deſign*, Hogarth was ſeldom at a loſs. His invention was fertile, and his judgment accurate. An improper incident is rarely introduced, a proper one rarely omitted. No one could tell a ſtory better, or make it in all its circumſtances more intelligible. His genius, however, it muſt be owned, was ſuited only to *low* or *familiar* ſubjects; it never ſoared above *common* life: to ſubjects naturally ſublime, or which from antiquity or other accidents borrowed dignity, he could not riſe. In *compoſition* we ſee little in him to admire. In many of his prints the deficiency is ſo great as plainly to imply a want of all principle; which makes us ready to believe, that when we do meet with a beautiful group, it is the effect of chance. In one of his minor works, the Idle Prentice, we ſeldom ſee a croud more beautifully managed than in the laſt print. If the ſheriff's officers had not been placed in a line, and had been brought a little lower in the picture, ſo as to have formed a pyramid with the cart, the compoſition had been unexceptionable; and yet the firſt print of this work is ſuch a ſtriking inſtance of diſagreeable compoſition, that it is amazing how an artiſt who had any idea of beautiful forms could ſuffer ſo unmaſterly a performance to leave his hands. Of the *diſtribution of light* Hogarth had as little knowledge as of *compoſition*. In ſome of his pieces we ſee a good effect, as in the *Execution* juſt mentioned; in which, if the figures at the right and left corners had been *kept down* a little, the light would have been beautifully diſtributed on the fore-ground, and a fine ſecondary light ſpread over part of the croud. But at the ſame time there is ſo obvious a deficiency in point of effect in moſt of his prints, that it is very evident he had no principles. Neither was Hogarth a maſter in *drawing*. Of the muſcles and anatomy of the head and hands he had perfect knowledge; but his trunks are often badly moulded, and his limbs ill ſet on: yet his figures, upon the whole, are inſpired with ſo much life and meaning, that the eye is kept in good-humour in ſpite of its inclination to find fault. The author of the Analyſis of Beauty, it might be ſuppoſed, would have given us more inſtances of *grace* than we find in the works of Hogarth; which ſhows ſtrongly that theory and practice are not always united. Many opportunities his ſubjects naturally afford of introducing graceful attitudes, and yet we have very few examples of them. With inſtances of picureſque grace his works abound. Of his *expreſſion*, in which the force of his genius lay, we cannot ſpeak in terms too high. In every mode of it he was truly excellent. The paſſions he thoroughly underſtood, and all the effects which they produce in every part of the human frame. He had the happy art alſo of conveying his ideas with the ſame preciſion with which he conceived them. He was excellent too in expreſſing any humorous oddity which we often ſee ſtamped upon the human face. All his heads are caſt in the very mould of nature. Hence that endleſs variety which is diſplayed thro' his works; and hence it is that the difference ariſes between *his* heads and the affected caricaturas of thoſe maſters who have ſometimes amuſed themſelves with patching together an aſſemblage of features from their own ideas. Such are Spaniolet's; which, though admirably executed, appear plainly to have no archetypes in nature. Hogarth's, on the other hand, are collections of natural curioſities. The *Oxford-heads*, the *Phyſician's-arms*, and ſome of his other pieces, are expreſsly of this humorous kind. They are truly comic, though ill-natured effuſions of mirth; more entertaining than Spaniolet's, as they are pure nature; but leſs innocent, as they contain ill-directed ridicule.—But the ſpecies of expreſſion in which this maſter perhaps moſt excels, is that happy art of catching thoſe peculiarities of art and geſture which the ridiculous part of every profeſſion contract, and which for that reaſon become characteriſtic of the whole. His counſellors, his undertakers, his lawyers, his uſurers, are all conſpicuous at ſight. In a word, almoſt every profeſſion may ſee in his works that particular ſpecies of affectation which they ſhould moſt endeavour to avoid. The *execution* of this maſter is well ſuited to his ſubjects and manner of treating them. He etches with great ſpirit, and never gives one unneceſſary ſtroke."

HOGSHEAD, in commerce, a meaſure of capacity containing 63 gallons.

HOGUE, a town and cape on the north-weſt point of Normandy in France; near which Admiral Rook burnt the French admiral's ſhip called the *Riſing Sun*, and 12 more large men of war, the day after the victory obtained by Admiral Ruſſell near Cherburg in May 1692. W. Long. 2. 0. N. Lat. 49. 50.

HOIST, in ſea-language, denotes the perpendicular height of a flag or enſign, as oppoſed to the fly, which ſignifies its breadth from the ſtaff to the outer edge.

HOISTING ſignifies the operation of drawing up any body by the aſſiſtance of one or more tackles. Hoiſting is never applied to the act of pulling up any body by the help of a ſingle block, except in the exerciſe of extending the ſails by drawing them upwards along the maſts or ſtays, to which it is invariably applied.

HOKE-DAY, *Hock-Day*, or *Hock-Tueſday*, in ancient cuſtoms *(dies Martis, quem quindenam paſchæ vocant)*, the ſecond Tueſday after Eaſter week; a ſolemn feſtival celebrated for many ages in England in memory of the great ſlaughter of the Danes in the time of king Ethelred, they having been in that reign almoſt all deſtroyed in one day in different parts of the kingdom, and that principally by women. This is ſtill kept up in ſome counties; and the women bear the principal ſway in it, ſtopping all paſſengers with ropes and chains, and exacting ſome ſmall matter from them to make merry with. This day was very remarkable in former times, inſomuch as to be uſed on the ſame footing with Michaelmas for a general term or time of account. We find leaſes without date reſerving ſo much rent payable *ad duos anni terminos, ſcil. ad le* hoke-day, *& ad feſtum ſancti Michaelis*. In the accounts of Magdalen-college, Oxford, there is yearly an allowance *pro mulieribus hockantibus* of ſome manors of theirs in Hampſhire; where the men hock the women on Mondays, and the women hock them on Tueſdays. The meaning of it is, that on that day the women in merriment ſtopped the way with ropes, and pulled paſſengers to them, deſiring ſomething to be laid out for pious uſes.

Hoke-Day Money, or *Hoke-Tueſday Money*, a tribute anciently paid the landlord, for giving his tenants and bondmen leave to celebrate hock-day, or hoke-day, in memory of the expulſion of the domineering Danes.

HO-KIEN-FOU, a city of China, and one of the principal in the province of Pe-tcheli. It has two cities of the ſecond, and fifteen of the third, claſs in its diſtrict, but is remarkable for nothing but the neatneſs of its ſtreets.

HOLBEIN (Hans), a celebrated painter, born at Baſil in Switzerland in 1498, learned the rudiments of his art from his father, who was a painter; but ſoon ſhowed his ſuperior genius. In the town-houſe of Baſil he painted our Saviour's Paſſion; and in the fiſh-market of the ſame city Death's Dance, and a Dance of Peaſants, which were extremely admired; and Eraſmus was ſo pleaſed with them, that he deſired him to draw his picture, and was ever after his friend. He ſtaid ſome years longer at Baſil, till his neceſſities, occaſioned by his own extravagance and an increaſing family, made him comply with Eraſmus's perſuaſions to go to England. In his journey he ſtaid ſome days at Straſburg, where it is ſaid he applied to a very great painter for work, who took him in, and ordered him to give a ſpecimen of his ſkill. On which Holbein finiſhed a piece with great care, and painted a fly on the moſt eminent part of it; after which he privately withdrew in the abſence of his maſter, and purſued his journey, without ſaying any thing to any body. When the painter returned home, he was aſtoniſhed at the beauty and elegance of the drawing; and eſpecially at the fly, which he at firſt took for a real one, and endeavoured to remove it with his hand. He now ſent all over the city for his journeyman; but after many inquiries, diſcovered that he had been thus deceived by the famous Holbein.—Holbein having in a manner begged his way to England, preſented a letter of recommendation from Eraſmus to Sir Thomas More, and alſo ſhowed him Eraſmus's picture. Sir Thomas, who was then lord-chancellor, received him with all the joy imaginable, and kept him in his houſe between two and three years; in which time he drew Sir Thomas's picture, and thoſe of many of his relations and friends. Holbein one day happening to mention a nobleman who had ſome years before invited him to England, Sir Thomas was very ſolicitous to know who it was. Holbein ſaid that he had forgot his title, but remembered his face ſo well, that he believed he could draw his likeneſs; which he did ſo perfectly, that the nobleman it is ſaid was immediately known by it. The chancellor having now adorned his apartments with the productions of this great painter, reſolved to introduce him to Henry VIII. For this purpoſe, he invited that prince to an entertainment; having, before he came, hung up all Holbein's pieces in the great hall, in the beſt order, and placed in the beſt light. The king, on his firſt entrance into this room, was ſo charmed with the ſight, that he aſked whether ſuch an artiſt was now alive, and to be had for money? Upon this, Sir Thomas preſented Holbein to his majeſty; who immediately took him into his ſervice, and brought him into great eſteem with the nobility and gentry, by which means he drew a vaſt number of portraits. But while he was here, there happened an affair which might have proved fatal to him, had he not been protected by the king. On the report of this painter's character, a lord of the firſt quality came to ſee him when he was drawing a figure after the life. Holbein ſent to deſire his lordſhip to defer the honour of his viſit to another day; which the nobleman taking for an affront, broke open the door, and very rudely went up ſtairs. Holbein hearing a noiſe, came out of his chamber; and meeting the lord at his door, fell into a violent paſſion, and puſhed him backwards from the top of the ſtairs to the bottom. However, immediately reflecting on what he had done, he eſcaped from the tumult he had raiſed, and made the beſt of his way to the king. The nobleman, much hurt, though not ſo much as he pretended, was there ſoon after him; and upon opening his grievance, the king ordered Holbein to aſk his pardon. But this only irritated the nobleman the more, who would not be ſatisfied with leſs than his life; upon which the king ſternly replied, "My lord, you have not now to do with Holbein, but with me: whatever puniſhment you may contrive by way of revenge againſt him, ſhall certainly be inflicted on yourſelf. Remember, pray, my lord, that I can whenever I pleaſe make ſeven lords of ſeven ploughmen, but I cannot make one Holbein of even ſeven lords." Holbein died of the plague at his lodgeings at Whitehall in 1554. "It is amazing (ſays De Piles), that a man born in Switzerland, and who had never been in Italy, ſhould have ſo good a *guſto*, and ſo fine a genius for painting." He painted alike in every manner; in freſco, in water-colours, in oil, and in miniature. His genius was ſufficiently ſhown in the hiſtorical ſtyle, by two celebrated compoſitions which he painted in the hall of the Stillyard company. He was alſo eminent for a rich vein of invention, which he ſhowed in a multitude of deſigns which he drew for engravers, ſtatuaries, jewellers, &c. and he had this ſingularity, that he painted with his left hand.

HOLCUS, INDIAN MILLET or CORN: A genus of the monœcia order, belonging to the polygamia claſs of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx of the hermaphrodite is an uniflorous or biflorous glume; the coralla is a glume with an awn; there are three ſtamina, two ſtyles, and one ſeed. The male calyx is a bivalved glume; there is no corolla, but three ſtamina.

Species. Of this genus there are 13 ſpecies, two of which are natives of Britain. The moſt remarkable of theſe is the latanus, or creeping ſoft graſs of Hudſon; for the deſcription and properties of which ſee AGRICULTURE, nº 59. The moſt remarkable of the foreign ſpecies is the ſorghum, or Guinea-corn. The ſtalks are large, compact, and full eight feet high. In Senegal the fields are entirely covered with it. The negroes, who call it *guiarnot*, cover the ears when ripe with its own leaves to ſhelter it from the ſparrows, which are very miſchievous in that country. The grain made into bread, or otherwiſe uſed, is eſteemed very wholeſome. With this the ſlaves in the Weſt Indies are generally fed, each being allowed from a pint to a quart every day. The juice of the ſtalks is ſo agreeably luſcious, that, if prepared as the ſugar-canes, they would afford an excellent ſugar. The negroes on the coaſt of Guinea make of two kinds of millet a thick-grained pap called *couſcous*, which is common food.

Plate CCXXXV.

HOLD, the whole interior cavity or belly of a ſhip, or all that part of her inſide which is comprehended between the floor and lower-deck throughout her whole length.—This capacious apartment uſually contains the ballaſt, proviſions, and ſtores of a ſhip of war, and the principal part of the cargo in a merchantman. The diſpoſition of theſe articles with regard to each other naturally falls under conſideration in the article STOWAGE: it ſuffices in this place to ſay, that the places where the ballaſt, water, proviſions, and liquors are ſtowed, are known by the general name of the *hold*. The ſeveral ſtore-rooms are ſeparated from each other by *bulk-heads*, and are denominated according to the articles which they contain, the *ſail-room*, the *bread-room*, the *fiſh-room*, the *ſpirit-room*, &c.

HOLDER (William), a learned and philoſophical Engliſhman, was born in Nottinghamſhire, educated in Pembroke-hall Cambridge, and in 1642 became rector of Blechingdon of Oxford. In 1660 he proceeded D. D. was afterwards canon of Ely, fellow of the Royal Society, canon of St Paul's, ſub-dean of the royal chapel, and ſub-almoner to his majeſty. He was a very accompliſhed perſon, and withal a great virtuoſo: and he wonderfully diſtinguiſhed himſelf, by making a young gentleman of diſtinction who was born deaf and dumb to ſpeak. This gentleman's name was Alexander Popham, ſon of colonel Edward Popham, who was ſome time an admiral in the ſervice of the long parliament. The cure was performed by him in his houſe at Blechingdon in 1659; but Popham loſing what he had been taught by Holder after he was called home to his friends, was ſent to Dr Wallis, who brought him to his ſpeech again. Holder publiſhed a book, intitled “the Elements of Speech; an eſſay of inquiry into the natural Production of Letters: with an appendix concerning perſons that are deaf and dumb, 1669,” 8vo. In the appendix he relates how ſoon, and by what methods, he brought Popham to ſpeak. In 1678, he publiſhed in 4to “a Supplement to the Philoſophical Tranſactions of July 1670, with ſome reflections on Dr Wallis's letter there inſerted.” This was written to claim the glory of having taught Popham to ſpeak, which Wallis in the ſaid letter had claimed to himſelf; upon which the Doctor ſoon after publiſhed “a Defence of the Royal Society, and the Philoſophical Tranſactions, particularly thoſe of July 1670, in anſwer to the Cavils of Dr William Holder, 1678,” 4to. Holder was ſkilled in the theory and practice of muſic, and wrote “a Treatiſe of the natural Grounds and Principles of Harmony, 1694,” 8vo. He wrote alſo “a Diſcourſe concerning Time, with Application of the natural Day, lunar Month, and ſolar year, &c. 1694,” 8vo. He died at Amen Corner in London, January 24. 1696-7, and was buried in St Paul's.

HOLDERNESS, a peninſula in the Eaſt-Riding of Yorkſhire, having the German ſea on the eaſt, and the Humber on the ſouth. It had the title of an earldom, now extinct.

HOLDSWORTH (Edward), a very polite and elegant ſcholar, was born about 1688, and trained at Wincheſter ſchool. He was thence elected demy of Magdalen college, Oxford, in July 1705; took the degree of M. A. in April 1711: become a college-tutor, and had many pupils. In 1715, when he was to be choſen into a fellowſhip, he reſigned his demyſhip and left the college, becauſe unwilling to ſwear allegiance to the new government. The remainder of his life was ſpent in travelling with young noblemen and gentlemen as tutor: in 1741 and 1744 he was at Rome in this capacity. He died of a fever at Lord Digby's houſe at Coleſhill in Warwickſhire, December 30. 1747. He was the author of the “Muſcipula,” a poem, eſteemed a maſter-piece in its kind, and of which there is a good Engliſh tranſlation by Dr John Hoadly, in vol. 5. of Dodſley's Miſcellanies. He was the author alſo of a diſſertation, intituled “Pharſalia, and Philippi; or the two Philippi in Virgil's Georgics attempted to be explained and reconciled to Hiſtory, 1741,” 4to; and of “Remarks and Diſſertations on Virgil; with ſome other claſſical Obſervations, publiſhed with ſeveral notes and additional remarks by Mr Spence, 1768,” 4to. Mr Spence ſpeaks of him in Polymetis, as one who underſtood Virgil in a more maſterly manner than any perſon he ever knew.

HOLERACEÆ, (from *holus*, “pot-herbs)”; the name of the 12th order in Linnæus's fragments of a natural method, conſiſting of plants which are uſed for the table, and enter into the economy of domeſtic affairs. See BOTANY, p. 459.

HOLIBUT, in ichthyology. See PLEURONECTES.

HOLIDAY (Dr Barten), a learned divine and poet, was the ſon of a taylor in Oxford, and born there about the year 1593. He ſtudied at Chriſt-church college, and in 1615 took orders. He was before admired for his ſkill in poetry and oratory; and now diſtinguiſhing himſelf by his eloquence and popularity as a preacher, he had two benefices conferred on him in the dioceſe of Oxford. In 1618, he went as chaplain to Sir Francis Stewart, when he accompanied Count Gondamore to Spain. Afterwards he became chaplain to the king, and before the year 1626 was promoted to the archdeaconry of Oxford. In 1642 he was made doctor of divinity at Oxford; near which place he ſheltered himſelf during the time of the rebellion; but after the reſtoration returned to his archdeaconry, where he died in 1661. His works are, 1. Twenty ſermons, publiſhed at different times. 2. *Philoſophiæ polito-barbaræ ſpecimen*, 4to. 3. Survey of the world, a poem in ten books, octavo. 4. A tranſlation of the Satires of Juvenal and Perſius, 5. Technogamia, or the marriage of the arts, a comedy.

HOLINESS, or SANCTITY; a quality which conſtitutes or denominates a perſon or thing *holy*; i. e. pure, or exempt from ſin. The word is alſo uſed in reſpect of perſons and things that are ſacred, *i. e.* ſet apart to the ſervice of God, and the uſes of religion.

HOLINESS, is alſo a title or quality attributed to the pope; as that of *majeſty* is to kings. Even kings, when writing to the pope, addreſs him under the venerable appellation of *Your Holineſs*, or *Holy Father*; in Latin, *Sanctiſſime* or *Beatiſſime Pater*. Anciently the ſame title was given to all biſhops. The Greek emperors alſo were addreſſed under the title of *Holineſs*, in regard of their being anointed with holy oil at their coronation. De Cange adds, that ſome of the kings of England have had the ſame attribute;

that the orientals have frequently refuſed it to the pope.

HOLINSHED (Raphael), an Engliſh hiſtorian famous for the *Chronicles* under his name, was deſcended from a family that lived at Boſely in Cheſhire; but neither the time of his birth, and ſcarcely any circumſtances of his life, are known. However, he appears to have been a man of conſiderable learning, and to have had a genius particularly adapted for hiſtory. His Chronicles of *England, Scotland,* and *Ireland,* were firſt publiſhed at London in 1570, in 2 vols folio; and then in 1587, in 3 vols. In this ſecond edition ſeveral ſheets in the 2d and 3d vols were caſtrated for containing ſome paſſages diſagreeable to queen Elizabeth and her miniſters; but the caſtrations have ſince been printed apart. Holinſhed was not the ſole compiler of this work, being aſſiſted in it by ſeveral other hands. The time of his death is unknown; but from his will, which is prefixed to Hearne's edition of *Cambden's Annals,* it appears to have happened between 1578 and 1582.

HOLLAND (Philemond), M. D. commonly called the Tranſlator general of his age, was educated in the univerſity of Cambridge. He was for many years a ſchoolmaſter at Coventry, where he alſo practiſed phyſic. He tranſlated Livy, Pliny's Natural Hiſtory. Plutarch's Morals, Suetonius, Ammianus Marcellinus, Xenophon's Cyropædia, and Cambden's Britannia, into Engliſh; and the geographical part of Speed's Theatre of Great Britain into Latin. The Britannia, to which he made many uſeful additions, was the moſt valuable of his works. It is ſurpriſing, that a man of two profeſſions could find time to tranſlate ſo much; but it appears from the date of the Cyropædia, that he continued to tranſlate till he was 80 years of age. He died in 1636, aged 85. He made the following epigram upon writing a large folio with a ſingle pen.

With one ſole pen I wrote this book,
Made of a grey gooſe quill;
A pen it was when it I took,
And a pen I leave it ſtill.

HOLLAND, the largeſt of the Seven United Provinces, divided into South and North Holland, the latter of which is alſo called *Weſt Frieſland,* is bounded on the weſt by the German ocean, or north ſea; to the eaſt by the Zuyder-ſee, the province of Utrecht, and part of Gelderland; to the ſouth by Dutch Brabant and Zealand; and to the north by the Zuyder-ſee. Its greateſt extent from north to ſouth, including the iſland of Texel, is about 90 Engliſh miles; but from eaſt to weſt its extent varies from 40 to 25. To defend it againſt the ſea, dykes have been erected at an immenſe expence, and innumerable canals cut to drain it, as being naturally very low and marſhy. Some parts of the province are very fruitful in corn; but the greater parts conſiſt in rich paſtures, wherein are kept large herds of kine, which ſupply them with incredible quantities of butter and cheeſe. Of the latter, that of Edam, in North Holland, is highly eſteemed. The many rivers and canals that interſect the province are of great advantage to its commerce, but contribute to render the air foggy and unwholeſome. There is a communication by water betwixt almoſt every town and village. Towards the middle alſo of the province are great numbers of turf-pits. It is ſo populous, that the number of the inhabitants is computed at 1,200,000. In point of cleanlineſs no country ſurpaſſes, and few come up to it, eſpecially in North Holland, and that even in the villages. From the counts of Holland this province devolved, in 1436, to the dukes of Burgundy, and from them to the houſe of Auſtria, along with the other provinces. The ſtates of Holland and Weſt Frieſland are compoſed of the nobility and deputies of the towns; of the latter there are 18 that ſend deputies to the aſſembly of the ſtates, which is held at the Hague. The grand penſionary is a perſon of great dignity and weight in this aſſembly, and his office requires extraordinary abilities. There are alſo two councils compoſed of deputies, one for South, and another for North Holland, who have the cognizance of the revenue and military affairs. The whole province ſends one deputy from among the nobleſſe to the ſtates general, who takes precedence of all others, together with three or four more. There are two ſupreme courts of judicature for Holland and Zealand; *viz.* the great council of Holland and Zealand, and the hof or court of Holland. To theſe appeals lie from the towns; but the cauſes of noblemen come before them in the firſt inſtance. With reſpect to the eccleſiaſtical government, there is a ſynod held annually both in South and North Holland, of which the former contains eleven claſſes and the latter ſix; and the miniſters of both together amount to 331. In the whole province are 37 towns, 8 boroughs, and 400 villages.—For the hiſtory, ſee UNITED PROVINCES.

HOLLAND, one of the diviſions of Lincolnſhire in England. It ſo much reſembles the province of that name upon the continent, in moſt reſpects, being low and marſhy, with the ſea on one ſide, and canals running through it, that it muſt either have had its name from thence, or on the ſame account. On the eaſt it has what the ancient geographers call *Æſtuarium Metaris,* now the Waſhes, which are overflowed at high water, and part of Cambridgeſhire on the ſouth. The lower part of it is full of bogs and marſhes, and has huge banks to defend it againſt the ſea and land floods. The ground is ſo ſoft, that horſes are worked unſhod; and it produces plenty of graſs, but little corn.—The whole tract ſeems to have been gained from the ſea; and is divided into Upper and Lower, the latter of which was unpaſſable; but ſince the fens have been drained, the lands are grown more ſolid, and the inhabitants ſow cole-ſeed upon them to their great profit. Though there are no ſtones to be found in or upon the ground, yet moſt of the churches are of ſtone. They have no freſh water but from the clouds, which is preſerved in pits; but if theſe are deep, it ſoon turns brackiſh; and if they are ſhallow, they ſoon become dry.

New HOLLAND, the largeſt iſland in the world, reaching from 10 to 44 deg. S. Lat. and between 110 and 154 of Long. eaſt from London. It received its name from having been chiefly explored by Dutch navigators. The land firſt diſcovered in thoſe parts was called *Eendraght* (Concord) *Land,* from the name of the ſhip on board which the diſcovery was made, in 1616; 24 deg. and 25 deg. ſouth. In 1618, another part of this coaſt, nearly in 15 deg. ſouth, was

New-Holland.

diſcovered by Zeachen, who gave it the name of *Arnheim* and *Diemen;* though a different part from what afterwards received the name of Diemen's Land from Taſman, which is the ſouthern extremity, in latitude 43 deg. In 1619, Jan Van Edels gave his name to a ſouthern part of New-Holland. Another part, ſituated between 30 and 33 deg. received the name of *Leuwen*. Peter Van Nuitz gave his name, in 1627, to a coaſt which communicates to Leuwen's Land towards the weſtward; and a part of the weſtern coaſt, near the tropic of Capricorn, bore the name of *De Wits*. In 1628, Peter Carpenter, a Dutchman, diſcovered the great gulph of Carpentaria, between 10 and 20 deg. ſouth. In 1687, Dampier, an Engliſhman, ſailed from Timor, and coaſted the weſtern parts of New-Holland. In 1699, he left England, with a deſign to explore this country, as the Dutch ſuppreſſed whatever diſcoveries had been made by them. He ſailed along the weſtern coaſt of it, from 28 to 15 deg. He ſaw the land of Endraught and of De Wit. He then returned to Timor: from whence he went out again; examined the iſles of Papua; coaſted New Guinea; diſcovered the paſſage that bears his name; called a great iſland which forms this paſſage or ſtrait on the eaſt ſide, *New-Britain;* and ſailed back to Timor along New-Guinea. This is the ſame Dampier who, between 1683 and 1691, ſailed round the world by changing his ſhips. Notwithſtanding the attempts of all theſe navigators, however, the eaſtern part of this vaſt tract was totally unknown till Captain Cook made his late voyages; and by fully exploring that part of the coaſt, gave his country an undoubted title to the poſſeſſion of it; which accordingly has ſince been taken poſſeſſion of under the name of *New South Wales*.

1 Whether the name of *continent* belongs to New-Holland.

Some have diſputed whether the title of *iſland* can be properly applied to a country of ſuch vaſt extent, or whether it ought not rather to be denominated a *continent;* while others have replied, that though the word iſland, and others, ſimilar to it, do indeed ſignify a tract of land ſurrounded by ſea, yet in the uſual acceptation it means only a land of moderate extent ſurrounded in this manner. Were it otherwiſe, we might call the whole world an iſland, as it is every where ſurrounded by the ſea; and in fact, Dionyſius Perigetes applies this term to it, with the addition of the word *immenſe*, to diſtinguiſh it from other iſlands. The beſt rule, according to Mr Stockdale, for determining when a country ought to loſe the name of *iſland* and begin to be called a *continent*, is when it begins to loſe the advantages of an inſular ſituation. The firſt and principal of theſe, is the being capable of an union under one government, and thence deriving a ſecurity from all external attacks excepting thoſe by ſea; but in countries of great extent, this is not only difficult, but impoſſible. If we conſider, therefore, New-Holland as extending about a thouſand miles every way, we ſhall find that its claim to be called a continent is undoubted; its length from eaſt to weſt being about 2400 Engliſh miles, and 2300 from north to ſouth.

2 Captain Cook's account of the country.

This coaſt was firſt explored by Captain Cook in the year 1770; but his ſtay was too ſhort to examine the nature of the country with the accuracy which he would otherwiſe have done had he continued longer in it. In general, it was found rather barren than otherwiſe. Many brooks and ſprings were found along the eaſtern coaſt, but no river of any conſequence. They found only two kinds of trees uſeful as timber, the pine, and another which produces a ſort of gum. They found three kinds of palm-trees; but few eſculent plants, though there are abundance of ſuch as might gratify the curioſity of the botaniſt. A great variety of birds were met with, which have ſince been particularly deſcribed; but the number of quadrupeds bears but a very ſmall proportion to that of the other animals. The moſt remarkable inſects ſeen at this time were the green ants (A), who build their neſts upon trees in a very ſingular manner.

This

(A) Theſe little animals form their habitations, by bending down the leaves of trees, and gluing the ends of them together ſo as to form a purſe. Though theſe leaves are as broad as a man's hand, they perform this feat by main ſtrength, thouſands of them being employed in holding down the leaves, while multitudes of others apply the glutinous matter. Captain Cook's people aſcertained themſelves that this was the caſe, by ſometimes diſturbing them at their work; in which caſe the leaf always ſprung up with an elaſticity which they could not have ſuppoſed that ſuch minute inſects were capable of overcoming. For this curioſity, however, they ſmarted pretty ſeverely; for thouſands of theſe little enemies inſtantly threw themſelves upon the aggreſſors, and revenged themſelves by their bites or ſtings for the interruption they had met with. Theſe were little leſs painful at firſt than the ſting of a bee; but the pain did not laſt above a minute. Another ſpecies of ants burrow themſelves in the root of a plant which grows on the bark of trees like the miſletoe, and which is commonly as big as a large turnip. When this is cut, it appears interſected with innumerable winding paſſages all filled with theſe animals; notwithſtanding which, the vegetation of the plant ſuffers no injury. Theſe do not give pain by their ſtings, but produce an intolerable itching by crawling about on the ſkin. They are about the ſize of the ſmall red ant in Britain. Another ſort, which do not moleſt in any manner, reſemble the white ants (ſee Termes) of the Eaſt-Indies. They conſtruct neſts three or four times as big as a man's head on the branches of trees; the outſides being compoſed of ſome vegetable matter along with a glutinous ſubſtance. On breaking the outer cruſts of theſe hives, innumerable cells appear ſwarming with inhabitants, in a great variety of winding directions, all communicating with each other, and with ſeveral other neſts upon the ſame tree. They have alſo another houſe built on the ground, generally at the root of a tree; formed like an irregular ſided cone; ſometimes more than ſix feet high, and nearly as much in diameter. The outſide of theſe is of well-tempered clay about two inches thick, and within are the cells, which have no opening outward. One of theſe is their ſummer and the other their winter dwelling, communicating with each other by a large avenue leading to the ground, and by a ſubterraneous paſſage. The ground ſtructures are proof againſt wet, which thoſe on the branches are not.

3 Settlement of a Britiſh colony in New-Holland.

This country has now become an object of more conſequence than formerly, by reaſon of the eſtabliſhment of a Britiſh colony in it; where the criminals condemned to be tranſported are ſent to paſs their time of ſervitude. Before this plan was reſolved on by government, another had been diſcuſſed, *viz.* that of employing theſe criminals in workhouſes; and Judge Blackſtone, with Mr Eden and Mr Howard, had conſidered of the beſt method of putting it in execution: but though this plan had been approved by parliament as early as 1779, ſome difficulties always occured, which prevented its going forward; and at length, on the 6th of December 1786, orders were iſſued by his majeſty in council for making a ſettlement on New-Holland, eſtabliſhing a court of judicature in the colony, and other regulations neceſſary on the occaſion. The whole received the complete ſanction of the legiſlature in the beginning of the year 1787. The ſquadron appointed for putting the deſign in execution began to aſſemble at the Mother Bank, the place of rendezvous, in the iſle of Wight, on the 16th of March 1787. It conſiſted of the Sirius frigate Captain John Hunter, the Supply armed tender Lieutenant H. L. Ball; three ſtore-ſhips, the Golden-grove, Fiſhburn, and Borrowdale, for carrying proviſions and ſtores for two years; and laſtly, ſix tranſports, the Scarborough and Lady Penrhyn from Portſmouth, the Friendſhip and Charlotte from Plymouth, and the Prince of Wales and Alexander from Woolwich. Theſe were to carry the convicts, with a detachment of marines in each proportioned to the nature of the ſervice; the largeſt where reſiſtance was moſt expected, *viz.* in thoſe which carried the greateſt number of male convicts. On the arrival of Governor Phillip at the ſtation, he hoiſted his flag on board the Sirius as commodore of the ſquadron; and the embarkation being completed, he gave the ſignal to weigh anchor on the 13th of May at day-break. The number of convicts was 778, of whom 558 were men. They touched at the iſland of Teneriffe on the 3d of June, without meeting with any bad accident. Here they ſtaid a week, in order to procure ſuch refreſhments as were neceſſary for preventing the diſorders moſtly to be dreaded in ſuch a long and perilous voyage. In this they ſucceeded to their wiſh; and were about to depart on the 9th of June, when it was diſcovered that one of the convicts had made his eſcape, having found means to cut away a boat and make off with it. He offered himſelf as a ſailor aboard a Dutch veſſel at that time in the harbour, but was refuſed; on which he attempted to conceal himſelf in a cove. In this he would probably have ſucceeded, had it not been for the boat which he could not conceal; ſo that he was ſoon diſcovered and brought back to the ſhip, where, however, he obtained his pardon from the governor.

On the 10th of June the fleet ſet ſail from Santa Cruz in the iſland of Teneriffe, and on the 18th came in ſight of the Cape Verd iſlands, where they ſteered for St Jago; but the want of a favourable wind and other circumſtances prevented their getting in; ſo that as Governor Phillip did not chuſe to waſte time, they did not touch land till they came to Rio Janeiro on the coaſt of Braſil. It may ſeem ſurpriſing, that a voyage to the eaſtward, which of itſelf may be accounted of ſufficient length, ſhould thus be wilfully made ſo much longer, by ſailing twice acroſs the Atlantic. The calms, however, ſo frequent on the coaſt of Africa, ſeem of themſelves to be a ſufficient inducement for navigators to preſerve a weſterly courſe; and even the iſlands at which it is ſo neceſſary to touch, are not far diſtant from the American coaſt. The returning tracks of Captain Cook's three voyages are all within a little ſpace of the 45th degree of weſt longitude, which is even 10 degrees farther weſt than Cape St Roque; and that courſe appears to have been taken voluntarily, without any extraordinary inducement.

During the time of their ſtay at Santa Cruz the weather had been very moderate; the barometer about 30 inches; and the thermometer never above 72; as they approached the Cape Verd iſlands it roſe to 82, and did not exceed 82° 51′ all the way from thence to Rio Janeiro. Here they met with a very favourable reception, contrary to that which Captain Cook experienced on a ſimilar occaſion. Proviſions were ſo cheap, that though the allowance of meat was fixed by the governor at 20 ounces per day, the men were victualled completely at 3¾ each, including rice, vegetables, and every other neceſſary. Wine was not at this time to be had except at an advanced price; but rum was laid in, and ſuch ſeeds and plants procured as were thought moſt likely to flouriſh in New South Wales; particularly coffee, indigo, cotton, and the cochineal fig. An hundred ſacks of caſſada were likewiſe purchaſed as a ſubſtitute for bread, if it ſhould happen to be ſcarce. By the kindneſs of the viceroy alſo, ſome deficiencies in the military ſtores were made up from the royal arſenal, and every aſſiſtance given which the place could afford. They arrived here on the 5th of Auguſt 1787, and ſet ſail on the 4th of September, receiving as the laſt compliment from the governor a ſalute of 21 guns.

4 They arrive at New-Holland.

From Rio Janeiro the fleet had a fine run to Table Bay, in the ſouthern extremity of Africa, which they accompliſhed in 39 days; were they took in the refreſhments meant to ſupply them during the remainder of the voyage. Here they arrived on the 13th of October; and having ſupplied themſelves with a great number of live ſtock, they ſet ſail on the 12th of November, but were long impeded by contrary winds from the ſoutheaſt. On the 25th they were only 80 leagues diſtant from the Cape, when Governor Phillip left the Sirius and went on board the Supply tender; in hopes, by leaving the convoy, to gain ſufficient time for examining the country round Botany Bay, that the moſt proper ſituation for the new colony might be choſen before the tranſports ſhould arrive. They now met with favourable winds, blowing generally in very ſtrong gales from the northweſt, weſt, and ſouthweſt. The wind ſhifted only once to the eaſt, but did not continue in that direction above a few hours. On the 3d of January 1788 the Supply came within ſight of New South Wales; but the winds then became variable, and a current, which at times ſet very ſtrongly to the ſouthward, impeded her courſe ſo much, that it was not till the 18th of the month that ſhe arrived at Botany Bay.

5 Interview with the natives.

Governor Phillip no ſooner landed than he had an opportunity of converſing with the natives, who were aſſembled on ſhore. As it was the intention of this gentleman to conciliate if poſſible their friendſhip, he uſed every method at this firſt interview to inſpire them with a favourable idea of the Europeans. For this purpoſe he preſented them with beads and other trifling ornaments, which they ſeemed pleaſed to wear, though Captain Cook found them very indifferent about any kind of finery he could furniſh them with. They ſeemed, according to the account of that celebrated navigator, to be ſo attached to their own ornaments, that they made no account of any thing elſe. They received indeed ſuch things as were given them, but made no offer to return any thing in exchange; nor could they be made to comprehend that any thing of the kind was wanted. Many of the preſents which they had received were found afterwards thrown away in the woods.

6
Inconveniences of Botany Bay for a ſettlement,

Governor Phillip having parted with his new acquaintances in a friendly manner, next ſet about an examination of the country about Botany Bay, which had been ſtrongly recommended by Captain Cook as the moſt eligible place for a ſettlement. He found, however, that the bay itſelf was very inconvenient for ſhipping; being expoſed to the eaſterly winds, and ſo ſhallow that ſhips even of a moderate burden could not get far enough within land to be ſheltered from the fury of the ocean. Neither did the land about any part of this bay appear an eligible ſituation for a colony; being in ſome places entirely ſwampy, in others quite deſtitute of water. Point Sutherland ſeemed to afford the ſituation moſt free from objections, but the ſhips could not approach it; and even here the ground ſeemed to be univerſally damp and ſpungy: ſo that, on the whole, finding no place within the compaſs of the bay proper for the new ſettlement, they found themſelves obliged to remove ſomewhere elſe.

The reſt of the fleet arrived in two days after the Supply; and that no time might be loſt, Governor Phillip ordered the ground about Point Sutherland to be cleared, and preparations to be made for landing, while he went with ſeveral officers in three boats to examine Port Jackſon, which was only three leagues diſtant. Here they had the ſatisfaction to find one of the fineſt harbours in the world, where 1000 ſail of the line might ride in perfect ſafety. On examining the different coves, one was preferred which had a fine run of ſpring water, and where ſhips could anchor ſo cloſe to the ſhore, that at a very ſmall expence quays might be conſtructed for loading and unloading the largeſt veſſels. This was named by the governor *Sydney Cove*, in honour of Lord Sydney, and the country around it deſtined for the place of ſettlement. It is about half a mile long, and a quarter of a mile broad at the entrance. On the governor's return to Botany Bay, the reports made to him concerning the adjacent country were ſo exceedingly unfavourable, that orders were immediately given for the removal of the fleet to Port Jackſon.

7
A ſettlement formed at Port Jackſon.

On the morning of the 25th, therefore, the governor ſailed from Botany Bay, and was ſoon followed by the whole fleet.

8
Viſited by two French ſhips.

In the mean time, they were ſurpriſed by the appearance of two other European veſſels, which had been firſt ſeen off Botany Bay on the 24th. Theſe were found to be two French ſhips, named the *Aſtrolabe* and *Bouſſole*, which had left France on a voyage of diſcovery under the command of M. la Peyrouſe, in the year 1785. They had touched at the iſland of Santa Catharina on the coaſt of Braſil, and from thence gone by the extremity of South America into the Pacific Ocean, where they had run along by the coaſts of Chili and California; after which they had viſited Eaſter Iſland, Nootka Sound, Cook's river, Kamtſchatka, Manilla, the Iſles des Navigateurs, Sandwich, and the Friendly Iſles. They had alſo attempted to land on Norfolk Iſland, but found it impoſſible on account of the ſurf. During the whole voyage none were loſt by ſickneſs; but two boats crews had unfortunately periſhed in a ſurf on the northweſt coaſt of America; and at Maſuna, one of the *Iſles des Navigateurs*, M. L'Angle, captain of the Aſtrolabe, with 12 of his people, officers and men, were murdered by the ſavages. This was the more ſurpriſing, as there had been an uninterrupted friendſhip with them from the time the French touched at the iſland, till that unfortunate moment M. L'Angle had gone aſhore with two long boats for the purpoſe of filling ſome water-caſks. His party amounted to 40 men; and the natives, from whom the French had already received abundance of refreſhments, did not ſhow any ſigns of an hoſtile diſpoſition: But from whatever motive their reſentment was excited, the men had no ſooner begun to get out the boats, than the ſavages made a moſt furious and unexpected aſſault with ſtones. In this encounter M. L'Angle himſelf, with the people abovementioned, fell a ſacrifice to the treachery of theſe barbarians. The remainder of the party eſcaped with great difficulty; the ſhips having at that time paſſed a point of land which intercepted their view of the affray.

The convicts and others deſtined to remain in New South Wales being landed, no time was loſt in beginning to clear ground for an encampment, ſtore-houſes, &c. The work, however, went on but ſlowly, partly owing to the natural difficulties they had to encounter, and partly owing to the habitual indolence of the convicts, which indeed was naturally to be expected conſidering their former way of life. Nevertheleſs, by the end of the firſt week of February, the plan of an encampment was formed, and places were marked out for different purpoſes, ſo that the colony already began to aſſume ſome appearance of order and regularity. The materials and frame-work of a ſlight temporary habitation for the governor had been brought out from England ready formed, which were landed and put together with as much expedition as circumſtances would allow. Hoſpital tents were alſo erected; and the ſickneſs which ſoon took place ſhowed the propriety of ſo doing. In the paſſage from the Cape there had been but little ſickneſs, and few of the convicts had died; but a little time after they landed a dyſentery began to prevail, which proved fatal in ſeveral inſtances, and the ſcurvy began to rage with great violence, ſo that the hoſpital-tents were ſoon filled with patients. The diſorder proved the more virulent as freſh proviſions could but rarely be obtained; nor were eſculent vegetables often obtained in ſuch plenty as could produce any material alleviation of the complaint: the only remedy for the dyſentery was found to be a kind of red gum, produced in plenty by the trees growing upon this coaſt. The yellow gum has the ſame properties, though in an inferior degree.

In the beginning of February, a moſt violent ſtorm of thunder and lightning deſtroyed five of the ſheep which had a ſhed erected for them under a tree, which proved a prelude to other misfortunes among the cattle. The encampment, however, was carried on with great alacrity;

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alacrity; the foundation of the ſtore-houſes were laid, and every thing began to wear a promiſing appearance.

9 Regular form of government eſtabliſhed.

On the 7th of the month a regular form of government was eſtabliſhed in the colony, with all the ſolemnity which could poſſibly be given: the governor made a proper ſpeech to the convicts, reminding them of the ſituation in which they ſtood; and that now, if they continued their former practices, it was impoſſible they could hope for mercy if detected; neither could they expect to eſcape detection in ſo ſmall a ſociety. Offenders, therefore, he ſaid, would certainly be puniſhed with the utmoſt rigour; though ſuch as behaved themſelves in a proper manner, might always depend upon encouragement. He particularly noticed the illegal intercourſe betwixt the ſexes, as a practice which encouraged profligacy in every reſpect: for which reaſon he recommended marriage: and this exhortation ſeemed not to be altogether in vain, as 14 marriages were celebrated that very week in conſequence.

Heavy rains took place during the remainder of this month, which ſhowed the neceſſity of going on with the work as ſoon as poſſible. The want of carpenters, however, prevented this from being done ſo expeditiouſly as could have been wiſhed. Only 16 of theſe could be hired from all the ſhips; and no more than 12 of the convicts were of this profeſſion, of whom ſeveral were ſick; ſo that the party were by far too few for the work they had to perform. An hundred convicts were added as labourers; but with every effort it was found impoſſible to complete either the barracks or the huts for the officers as ſoon as could be wiſhed.

10 Norfolk Iſland ſettled.

On the 14th of February a ſmall party was ſent out to ſettle on Norfolk Iſland, who have ſince eſtabliſhed a colony there which promiſes to be of conſiderable utility†. It was ſoon found, however, abſolutely neceſſary to make examples of ſome of the convicts at Port Jackſon. Towards the end of February it was found neceſſary to convene a criminal court, in which ſix of the convicts received ſentence of death. One who was the head of the gang was executed the ſame day; one of the reſt was pardoned; the other four were reprieved, and afterwards exiled to a ſmall iſland within the bay, where they were kept on bread and water. They had frequently robbed both the ſtores and other convicts. The fellow who was executed, and two others, had been detected in ſtealing the very day on which they received a week's proviſion; and at the ſame time that their allowance was the ſame as that of the ſoldiers, ſpirituous liquors only excepted.

11 Broken Bay examined.

In the beginning of March the governor went out with a ſmall party to examine Broken Bay, lying about eight miles to the northward of Port Jackſon. This was found very extenſive, with many openings. One of the latter ended in ſeveral ſmall branches, and a large lagoon, which they could not at that time examine. Moſt of the land about the upper part of this branch was low and full of ſwamps, with great numbers of pelicans, and other aquatic birds. Among the reſt they met with an uncommon bird called at that time the *Hooded Gull*, but afterwards found to be the ſpecies named by Mr Latham the *Caſpian Tern*.

From this northweſt branch they proceeded acroſs the bay to the ſouthweſt branch, which is alſo very extenſive, with a ſecond opening to the weſtward capable of affording ſhelter to almoſt any number of ſhips, with depth of water for veſſels of almoſt any burden. The land was found much higher here than at Port Jackſon, more rocky, and equally covered with timber. Large trees were ſeen growing even on the ſummits of the mountains, which appeared totally inacceſſible to the human ſpecies. Round the headland which forms the ſouthern entrance into the bay is a third branch, which governor Philip thought the fineſt piece of water he had ever ſeen; which for that reaſon he honoured with the name of *Pit-water*. This branch, as well as the former, is ſufficient to contain all the navy of Great Britain; but the latter has a bar at the entrance of only 18 feet at low water. Within are from 7 to 15 fathoms. The land here is more level than on the ſouthweſt branch, and ſome ſituations are proper for cultivation. The governor determined to have returned by land, in order to explore the country betwixt Port Jackſon and Broken Bay, but the continual rains prevented him.

12 Death of la Receveur.

On the 10th of March the French ſhips departed, little intercourſe having paſſed between them and the Engliſh during the time of their ſtay. While the former remained in Botany Bay, Father la Receveur, who had come out in the Aſtrolabe as a naturaliſt, died of the wounds he had received in the battle with the inhabitants of Maſuna. A kind of monument was erected to his memory, with the following inſcription:

Hic jacet LE RECEVEUR
E. F. F. minimis Galliæ ſacerdos,
Phyſicus in circumnavigatione
Mundi
Duce DE LA PEYROUSE,
Ob. 17th, Feb. 1788.

This monument, however, was ſoon after deſtroyed by the natives; on which Governor Philip cauſed the inſcription to be engraved on copper and nailed to a neighbouring tree. M. de la Peyrouſe had paid a ſimilar tribute to the memory of Captain Clerke at Kamtſchatka.

13 Excurſions into the interior part of the country.

On the 15th of April, the governor, attended by ſeveral officers and a ſmall party of marines, ſet out on an expedition into the interior parts of the country. Their firſt landing was at the head of a ſmall cove named *Shell-cove*, near the entrance of the harbour on the north ſide. Proceeding in this direction, they arrived with great labour at a large lake ſurrounded on all ſides with bog and marſhy ground to a conſiderable extent, and in which they frequently plunged up to the waiſt. Here they obſerved that bird ſo rare in other parts of the world, *viz.* a black ſwan. On being fired at, it roſe, and ſhowed that its wings were edged with white, the bill being tinged red. They ſpent three days in a very laborious manner in paſſing the marſhes and ſwamps which lie in the neighbourhood of the harbour: and here they had an opportunity of obſerving, that all the ſmall ſtreams which deſcend into Port Jackſon proceed from ſwamps, occaſioned by the ſtagnation of the water in the low grounds as it riſes from the ſprings. On leaving theſe low grounds, they found them ſucceeded by a rocky and barren country; the hills covered with various flowering ſhrubs, though frequently inacceſſible by reaſon of various natural obſtacles. At about 15 miles diſtance from the ſea, the governor had a fine view of the internal parts of the country, which were mountainous.

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† See *Norfolk Iſland*.

To the moſt northerly chain of theſe he gave the name of *Carmarthen,* and to the moſt ſoutherly that of *Lanſdown Hills* ; and to one which lay between theſe he gave the name of *Richmond Hill.* It was conjectured, that a large river muſt riſe from theſe mountains ; but there was now a neceſſity for returning. On the 22d, however, another expedition was undertaken. Governor Phillip with his party landed near the head of the harbour. Here they found a good country ; but in a ſhort time arrived at a cloſe thicket through which they found it impoſſible to make their way, ſo that they were obliged to return. Next day, by keeping cloſe to the banks of a ſmall creek, they made a ſhift to paſs that obſtacle, and continued their courſe for three days to the weſtward. The country was now extremely fine, either entirely level or riſing in ſmall hills, the ſoil excellent, but ſtony in a few places. The trees grew at the diſtance of from 20 to 40 feet from each other, in general totally deſtitute of underwood, which was confined to the barren and ſtony ſpots. On the 5th day they ſaw for the firſt time in this ſecond expedition Carmarthen and Lanſdown hills; but the country all round was ſo beautiful, that Governor Phillip gave it the name of *Belle vue.* They were ſtill apparently 30 miles from the mountains which they had intended to reach ; but not having been able to carry more than ſix days proviſions along with them, they found it neceſſary to return ; and even with this ſmall ſtock the officers as well as men were obliged to carry heavy loads. During all this time they had not proceeded farther in a direct line than 30 miles, ſo great were the obſtructions they had met with from deep ravines, &c. Their return, however, was effected with much greater eaſe, having cleared a track, and marked trees all the way as they went along to direct them in their journey back. The country explored at this time appeared ſo fine, that Governor Phillip determined to form a ſettlement there as ſoon as a ſufficient number could be ſpared from thoſe works which were immediately neceſſary. On his return he had the mortification to find, that five ewes and a lamb had been killed very near the camp, and in the middle of the day. This miſchief was ſuppoſed to have been done by ſome dogs belonging to the natives.

14
Murders committed by the natives,

All this time the ſcurvy had continued to rage with great violence ; ſo that by the beginning of May near 200 people were incapable of work. For this reaſon and on account of the great difficulty of clearing the ground, no more than eight or ten acres of wheat and barley had been ſown, beſides what private individuals had ſown for themſelves ; and it was even feared that this ſmall crop would ſuffer from the depredations of ants and field-mice. To procure as much relief as poſſible therefore in the preſent exigence, the Supply was ſent in the beginning of May to Lord Howes Iſland in hopes of procuring ſome turtle and other proviſions ; but unfortunately the veſſel returned without any turtle, having met with ſqually weather, and being obliged to cut away her beſt bower anchor. The natives now began to ſhow an hoſtile diſpoſition which they had not hitherto done. One of the convicts, who had wandered away from the reſt in queſt of vegetables, returned with a very dangerous wound in the back ; giving information alſo, that another who had gone out for the ſame purpoſe had been carried off in his ſight by the natives, after being wounded in the head. A ſhirt and hat were afterwards found in ſome of the huts of the natives, but no intelligence of the man could be gained. This was followed by other miſfortunes of the ſame nature. On the 30th of the month, two men who had been employed in cutting ruſhes for thatch at ſome diſtance from the camp were found dead. One of them had four ſpears in his body, one of which had pierced quite through it ; but the other had no marks of violence upon him. In this caſe, however, it was proved, that thoſe who ſuffered had been the aggreſſors ; as they had been ſeen with one of the canoes of the natives which they had taken from one of the fiſhing places. All poſſible inquiry was made after the natives who had been guilty of the murder, but to no purpoſe. In the courſe of this inquiry, it was found that one of the natives had been murdered, and ſeveral wounded, previous to the attack upon the ruſh-cutters. The governor promiſed liberty to any convict who ſhould diſcover the aggreſſors ; but no information was procured, though it is probable that it may prevent accidents of that kind for the future. About this time the two bulls and four cows belonging to government and to the governor, having been left for ſome time by the man who had the charge of them, ſtrayed into the woods and could not be recovered, though they were afterwards traced to ſome diſtance.

The 4th of June being his majeſty's birth day, was celebrated with as much feſtivity as circumſtances would allow ; and on this occaſion it was firſt made public that the governor had given the name of *Cumberland County* to this part of the territory. The appointed boundaries were Carmarthen and Lanſdown hills on the weſt, the northern parts of Broken Bay on the north, and the ſouthern parts of Botany Bay on the ſouth ; thus including theſe three principal bays, with Sidney Cove nearly in the centre.

15
A convict executed.

The miſfortunes which attended thoſe convicts who ſtrayed to too great a diſtance from the ſettlement, were not ſufficient to prevent ſome of them from rambling into the woods, in hopes of ſubſiſting themſelves there and regaining their liberty. One of theſe, who had been guilty of a robbery, fled into the woods on the 5th of June, but was obliged to return half-ſtarved on the 24th. He had found it impoſſible to ſubſiſt in the woods, and had met with very little relief from the natives. One of them gave him a fiſh, but made ſigns for him to go away. According to his account, they themſelves were in a very miſerable ſituation ; and he pretended to have ſeen four of them apparently dying of hunger, who made ſigns to him for ſomething to eat. He pretended alſo to have fallen in with a party who would have burnt him, and that he made his eſcape from them with difficulty. He ſaid alſo, that he had ſeen the remains of a human body lying on a fire ; and endeavoured to inculcate the idea of theſe ſavages eating human fleſh when other proviſions were ſcarce. This poor wretch was tried and executed for the theft he had committed before his departure, along with another criminal.

16
Regular plan of a town laid.

By this time the colony was ſo far advanced, that the plan of a regular town had been marked out. The principal ſtreet, when finiſhed, is to be 200 feet wide, terminated by the governor's houſe, the main guard, and criminal court. The plans of other ſtreets are likewiſe marked out; and it is the governor's intention, that when houſes are built here, the grants of land ſhall be made with ſuch clauſes as will prevent the building of more than one houſe on one allotment, which is to conſiſt of 60 feet in front and 150 in depth. Thus a kind of uniformity will be preſerved in the building, narrow ſtreets prevented, and many inconveniences avoided, which a rapid increaſe of inhabitants might otherwiſe occaſion. It has likewiſe been an object of the governor's attention to place the public buildings in ſuch ſituations as will be eligible at all times, and particularly to give the ſtorehouſes and hoſpital ſufficient ſpace for future enlargement, ſhould it be found neceſſary. The firſt huts erected in this place were compoſed only of the ſoft wood of the cabbage palm, in order to give immediate ſhelter, and which had the further inconvenience of being uſed quite green. The huts of the convicts were conſtructed only of upright poſts wattled with ſlight twigs, and plaſtered up with clay. Buildings of ſtone might eaſily have been raiſed, had there been any means of procuring lime for mortar. There were three kinds of ſtone met with about Sidney Cove, one equal in goodneſs to Portland ſtone, an indifferent kind of ſand ſtone or fire-ſtone, and a ſort which ſeems to contain iron; but neither chalk nor any ſpecies of limeſtone have yet been diſcovered. Lime was indeed procured from oyſter-ſhells collected in the neighbouring coves to conſtruct a ſmall houſe for the governor; but it cannot be expected that a ſufficient quantity can thus be procured for many or very extenſive buildings. Good clay for bricks has been found near Sydney Cove, and very good bricks have been made of it; the wood alſo, notwithſtanding the many reports to the contrary, is found abundantly fit for various purpoſes after being thoroughly ſeaſoned. Such ſpecimens as have been ſent to England were fine-grained and free of knots, but heavy.

On the point of land that forms the weſt ſide of the Cove a ſmall obſervatory has been erected, the longitude of which has been aſcertained to be 159° 19′ 30″ eaſt from Greenwich, and the latitude 32° 52′ 30″ ſouth. Inſtead of thatch they now make uſe of ſhingles made from a certain tree, which has the appearance of a fir, but produces wood like Engliſh oak.

17
Different accounts of the colony.

With regard to the ſtate of this colony there have been various and diſcordant accounts. Some of theſe have repreſented the country in ſuch a light, that it would ſeem impoſſible to ſubſiſt on it; and it has been ſaid, that the people who have had the misfortune to go there already were in the utmoſt danger of ſtarving before any aſſiſtance could be ſent from Britain. Theſe reports, however, appear not to be well-founded. Difficulties muſt undoubtedly be felt at the firſt ſettlement of every uninhabited country; and we are not to expect that a colony, moſt of whom are wretches exiled for their crimes from their own country, can thrive in an extraordinary manner for ſome time. It appears, indeed, that ſo far from the tranſportation to this place having had any good effect in reforming them, the governor has been obliged to execute the utmoſt rigour of the law by hanging ſeveral of them. A good number of others have unaccountably diſappeared, and are ſuppoſed to have been murdered by the natives, or periſhed with hunger in the woods; ſo that, unleſs the numbers be recruited by more reſpectable inhabitants, it is not likely that much can be expected from the Port Jackſon ſettlement for a long time to come. Of this, however, there ſeems to be little doubt; the general ſpirit of emigration which prevails through moſt, indeed we may ſay all the countries of Europe, will undoubtedly ſoon ſupply a ſufficient number; and even ſome of the Americans, notwithſtanding the extent and fertility of their own country, and the liberty they enjoy in it, are ſaid to be willing to exchange theſe bleſſings for the precarious hopes of what may be obtained in New-Holland among Britiſh convicts and ſlaves. This rambling diſpoſition may perhaps be accounted for from an obſervation which has been made, *viz.* that "it may admit of a doubt whether many of the accommodations of a civilized life be not more than counterbalanced by the artificial wants to which they gave birth. That theſe accommodations do not give a ſatisfaction equivalent to the trouble with which they are procured, is certain; and it is no wonder, then, to find numbers of people in every country who are willing to exchange them for independent eaſe and tranquillity, which belong, comparatively ſpeaking, to few individuals in thoſe countries which are called civilized."

18
General account of the country.

With regard to the geography of this extenſive country, which may perhaps be reckoned a fifth general diviſion of the world, Captains Cook and Furneaux ſo fully explored its coaſts, that ſucceeding navigators have added nothing to their labours. The only part which ſtill remains unknown is that between the latitudes of 37° 58′ and 39° ſouth; and as none of the fleet which lately ſailed from Britain could be ſuppoſed to undertake any voyage of diſcovery, it is unknown whether a ſtrait interſects the continent in this place or not. Captain Tench, however, informs us, on the authority of a naval friend, "that when the fleet was off this part of the coaſt, a ſtrong ſet off ſhore was plainly felt."

A vaſt chain of lofty mountains run nearly in a north and ſouth direction farther than the eye can trace, about 60 miles inland. The general face of the country is pleaſing, diverſified with gentle riſings and ſmall winding valleys, covered for the moſt part with large ſpreading trees, affording a ſucceſſion of leaves in all ſeaſons. A variety of flowering ſhrubs, almoſt all entirely new to an European, and of exquiſite fragrance, abound in thoſe places which are free from trees; and among theſe, a tall ſhrub, bearing an elegant flower, which ſmells like Engliſh may, is peculiarly delightful, and perfumes the air to a great diſtance. There are but few trees; and, as Captain Tench and others relate, of ſo bad a grain, that they can ſcarcely be uſed for any purpoſe: This, however, Mr Stockdale aſcribes to their being uſed in an unſeaſoned ſtate,
19
Red and yellow gums.
as has been already mentioned. In return for theſe bad qualities, however, the trees yield vaſt quantities of the gum already mentioned as a cure for the dyſentery. It is of an acrid quality, and therefore requires to be given along with opiates. The tree which yields it is of very conſiderable ſize, and grows to a great height before it puts out any branches. The gum itſelf is uſually compared to *ſanguis draconis*, but differs from it in being perfectly ſoluble in water,

which the ſanguis draconis is not. It may be extracted from the wood by tapping, or taken out of the veins when dry. The leaves are narrow, and not unlike thoſe of a willow; the wood fine grained and heavy, but warps to ſuch a degree, when not properly ſeaſoned, as ſoon to become entirely uſeleſs.

The yellow gum is properly a reſin, being entirely inſoluble in water. It greatly reſembles gamboge, but has not the property of ſtaining. It is produced by a low ſmall plant with long graſſy leaves; but the fructification ſhoots out in a ſurpriſing manner from the centre of the leaves on a ſingle ſtraight ſtem to the height of 12 or 14 feet. This ſtem is ſtrong and light, and is uſed by the natives for making their ſpears. The reſin is generally dug up from the ſoil under the tree, not collected from it, and may perhaps be the ſame which Taſman calls *gum lac of the ground*. It has been tried by Dr Blanc phyſician to St Thomas's hoſpital, who found it very efficacious in the cure of old fluxes, and that in many and obſtinate caſes. Many of the New Holland plants have been already imported into Britain, and are now flouriſhing in perfection at the nurſery gardens of Mr Lee of Hammerſmith.

The ſoil immediately around Sidney Cove is ſandy, with here and there a ſtratum of clay; but hitherto the produce has not been remarkable. The principal difficutly hitherto experienced in clearing the ground ariſes from the ſize of the trees, which is ſaid to be ſo enormous, that 12 men have been employed for five days in grubbing up one. Captain Cook ſpeaks of ſome fine meadows about Botany Bay, but none of theſe have been ſeen by the preſent ſettlers, and Governor Phillip ſuppoſes them to have been ſwamps ſeen at a diſtance. Graſs grows in almoſt every place, but in the ſwamps with the greateſt vigour and luxuriancy, though not of the fineſt quality. It is found to agree better with cows and horſes than ſheep. A few wild fruits are ſometimes procured; among which is a kind of ſmall purple apple mentioned by Captain Cook; and a fruit which has the appearance of a grape, but taſting like a green gooſeberry, and exceſſively ſour.

20 Scarcity of freſh water.

21 Rivers diſcovered by Governor Phillip.

From the firſt diſcovery of this continent, the extreme ſcarcity of freſh water has been mentioned by every navigator. None have been fortunate enough to enter the mouth of any navigable river ſuch as might be expected in a country of ſuch extent. The ſettlers about Port Jackſon found enough for common purpoſes of life; but Captain Tench informs us, that when he left the country, towards the end of 1788, there has been no diſcovery of a ſtream large enough to turn a mill. Since that time, however, Governor Phillip has been more ſucceſsful, as we are informed by a letter of his to Lord Sidney, of date Feb. 13. 1790: In this letter he relates, that ſoon after the ſhips ſailed in November 1788, he again made an excurſion to Botany Bay, where he ſtayed five days; but the reſearches he made there tended only to confirm him in the opinion he already entertained that the country round it was by no means an eligible ſituation for a colony. After having viſited Broken Bay ſeveral times with boats, a river was found, which has ſince been traced, and all thoſe branches explored which afforded any depth of water. This river has obtained the name of *Hawkeſbury*, is from 300 to 800 feet wide, and ſeems navigable for the largeſt merchant ſhips as far up as Richmond hill, at which it becomes very ſhallow, and divides into two branches: on which account the governor calls Richmond Hill the head of the river. As after very heavy rains, however, the water ſometimes riſes 30 feet above its level, it would not be ſafe for ſhips to go up ſo far; but 15 or 20 miles below it they would lie in freſh water, and be perfectly ſafe.

The country about Broken Bay is at firſt high and rocky, but as we proceed up the river it becomes more level, the banks being covered with timber, and the ſoil a light rich mould, ſuppoſed to be very capable of cultivation. The other branches of this river are ſhallow, but probably run many miles up into the country. Great numbers of black ſwans and wild ducks were ſeen on theſe rivers, and the natives had ſeveral decoys for catching quails.

Richmond hill, near which a fall prevented the boats from proceeding farther up, is the moſt ſoutherly of a large range of hills which run to the northward, and probably join the mountains nearly parallel to the coaſt from 50 to 60 miles inland. The ſoil of this hill is good, and it lies well for cultivation. There is a very extenſive proſpect from the top, the whole country around ſeeming a level covered with timber. There is a flat of ſix or ſeven miles between Richmond hill and a break in the mountains which ſeparates Lanſdown and Carmarthen hills; in which flat the governor ſuppoſes that the Hawkeſbury continues its courſe; though the river could not be ſeen on account of the timber with which the ground is every where covered where the ſoil is good. Six miles to the ſouthward of Port Jackſon is a ſmall river; and 20 to the weſtward is one more conſiderable, which probably empties itſelf into the Hawkeſbury. As far as this river was at that time explored, the breadth was computed at from 300 to 400 feet. It was named the *Nepaan*, and, like the Hawkeſbury, ſometimes riſes 30 feet above its level. A party who croſſed the river attempted to reach the mountains, but found it impoſſible, probably for want of proviſions. After the firſt day's journey they met with ſuch a ſucceſſion of deep ravines, the ſides of which were frequently ſo inacceſſible, that in five days they could not proceed farther than 15 miles. At the time they turned back, they ſuppoſed themſelves to be 12 miles from the foot of the mountains. With regard to the ſtate of the colony, it appears from this letter to be as flouriſhing as could in any reaſonable manner be expected. Another has been formed at a place called Roſehill, at the head of the harbour of Sydney Cove. At this place is a creek, which at half flood has water for large boats to go three miles up; and one mile higher, the water is freſh and the ſoil good. Some ground having been cleared and cultivated, the governor in the above letter writes, that 27 acres were ſown with corn, and that in December the crop was got in: That the corn was exceedingly good; about 200 buſhels of wheat and 60 of barley, with a ſmall quantity of flax, Indian corn, and oats; all which is preſerved for ſeed: That if ſettlers are ſent out, and the convicts divided amongſt them, this ſettlement will very ſhortly maintain itſelf; but without which this country cannot be cultivated to any advantage. "At preſent (continues the governor) I have only one perſon, who has about 100 convicts under his direction, who is employed in cultivating the ground for the public benefit, and he has returned the quantity of corn abovementioned into the public ſtore: the officers have not raiſed ſufficient to ſupport the little ſtock they have: ſome ground I have had in cultivation will return about 40 buſhels of wheat into ſtore: ſo that the produce of the labour of the convicts employed in cultivation has been very ſhort of what might have been expected, and which I take the liberty of pointing out to your lordſhip in this place; to ſhow as fully as poſſible the ſtate of this colony, and the neceſſity of the convicts being employed by thoſe who have an intereſt in their labour." The country for 20 miles to the weſtward is very capable of cultivation; though the labour of cutting down the trees is very great. At Sidney Cove the ſtores had been infeſted by a ſwarm of rats which deſtroyed no leſs than 12,000 lb. weight of flour and rice. The gardens alſo had ſuffered very conſiderably; ſo that, having met with ſuch a conſiderable loſs of proviſion, and a ſufficient ſupply not being procured from the Cape, governor Phillip thought proper to ſend a further detachment to Norfolk Iſland, where the fertility of the ſoil afforded great hopes of their being able in a ſhort time to ſubſiſt themſelves independent of any aſſiſtance from the ſtores.

22 Government of the colony.

With regard to the civil eſtabliſhment in this colony, governor Phillip's juriſdiction extends from 43° 49′ to 10° 37′ ſouth, being the northern and ſouthern extremities of the continent. It commences again in 135° E. Long. from Greenwich; and proceeding in an eaſterly direction, includes all the iſlands within the abovementioned latitudes in the Pacific ocean; by which partition it is ſuppoſed that every ſource of litigation will be cut off, as all theſe are indiſputably the diſcovery of the Britiſh navigators.

The powers of the governor are abſolutely unlimited, no mention being made of a council to aſſiſt him in any thing; and as no ſtated time is appointed for aſſembling the courts ſimilar to the aſſizes and gaol deliveries in England, the duration of impriſonment is altogether in his hands. He is likewiſe inveſted with a power of ſummoning general courts martial; but the inſertion in the marine mutiny act, of a ſmaller number of officers than 13 being able to compoſe ſuch a tribunal, has been neglected; ſo that a military court, ſhould detachments be made from head quarters, or ſickneſs prevail, may not always be found practicable to be obtained, unleſs the number of officers in the ſettlement at preſent be increaſed. The governor is allowed to grant pardons in all caſes, treaſon and wilful murder excepted; and even in theſe he has authority to ſtay the execution of the law until the king's pleaſure ſhall be ſignified. In caſe of the governor's death, the lieutenant-governor takes his place; and on his deceaſe, the authority is lodged in the hands of the ſenior officer.

It was not long after the convicts were landed that there appeared a neceſſity for aſſembling a criminal court: and it was accordingly convened by warrant from the governor. The members were the judge advocate, who preſided, three naval, and three marine officers. The number of members is limited by act of parliament to ſeven: who are expreſsly ordered to be officers either of his majeſty's ſea or land forces. The court being met, completely arrayed and armed as at a military tribunal, the judge advocate proceeds to adminiſter the uſual oaths taken by jurymen in England to each member; one of whom afterwards ſwears him in a like manner. This ceremony being over, the crime is laid to the priſoner's charge, and the queſtion "guilty or not guilty" put to him. No law officer being appointed on the part of the crown, the party at whoſe ſuit he is tried is left to proſecute the priſoner entirely by himſelf. All the witneſſes are examined on oath; and the deciſion muſt be given according to the laws of England, or "as nearly as may be, allowing for the circumſtances and ſituation of the ſettlement," by a majority of votes, beginning with the youngeſt member, and ending with the preſident of the court. No verdict, however, can be given in caſes of a capital nature, unleſs at leaſt five of the ſeven members concur therein. The evidence on both ſides being finiſhed, and the priſoner's defence heard, the court is cleared, and, on the judgment being ſettled, is thrown open again, and ſentence pronounced. During the time of ſitting, the place in which it is aſſembled, is directed to be ſurrounded by a guard under arms, and admiſſion granted to every one who chuſes to enter it. Of late, however, ſays captain Tench, our coloniſts are ſuppoſed to be in ſuch a train of ſubordination, as to make the preſence of ſo large a military force unneceſſary; and two centinels in addition to the provoſt martial are conſidered as ſufficient.

23 Trials of convicts, &c.

The firſt trials which came before this court were thoſe of three convicts, one of whom was convicted of having ſtruck a marine with a cooper's adze, and behaving otherwiſe in a moſt ſcandalous and riotous manner for this he was condemned to receive 150 laſhes, being a ſmaller puniſhment than a ſoldier would have ſuffered in a ſimilar caſe. A ſecond, for having committed a petty theft, was ſent to a ſmall barren iſland, and kept there on bread and water only for a week. The third was ſentenced to receive 50 laſhes; but being recommended by the court to the governor, had his ſentence remitted. The ſame lenity, however, could not be obſerved in all caſes. One fellow, who had been condemned to be hanged, was pardoned while the rope was about his neck, on condition that he would become the common executioner ever after. He accepted the horrid office, but not without a *pauſe*. Some examples of ſeverity were undoubtedly neceſſary, and among theſe it is impoſſible to avoid feeling ſome regret for the fate of one who ſuffered death for ſtealing a piece of ſoap of eight-pence value: but by the laſt letter of governor Phillip, we are informed that the convicts in general are now behaving much better; more ſo indeed than ever he expected. The laſt ſtatement was of one woman who had ſuffered for a robbery; five children had died, and 28 been born. The whole amount of the deaths 77, of the births 87.

The number of convicts already ſent to New South Wales amounts to 2000 and upwards—above 1800 are ſince embarked for that ſettlement. The annual expence of the civil and military eſtabliſhments at that place is nearly L. 10,000.

Beſides the criminal court, there is an inferior one compoſed of the judge advocate, and one or more juſtices of the peace, for the trial of ſmall miſdemeanors. This court is likewiſe empowered to decide all law-ſuits; and its verdict is final, except where the ſum exceeds L.300, in which caſe an appeal can be made to England from its decree. In caſe of neceſſity, an admiralty court, of which the lieutenant governor is judge, may alſo be ſummoned for the trial of offences committed on the high ſeas.

24
Animals found in New-Holland.

The quadrupeds on the continent of New-Holland hitherto diſcovered are principally of the Opoſſum kind, of which the moſt remarkable is the Kangaroo. There is alſo a ſpecies of dogs very different from thoſe known in Europe. They are extremely fierce, and never can be brought to the ſame degree of familiarity with thoſe we are acquainted with. Some of them have been brought to England, but ſtill retain their uſual ferocity. There are a great many beautiful birds of various kinds; among which the principal are the black ſwans already mentioned, and the oſtrich or caſſowary; which laſt arrives frequently at the height of ſeven feet or more. Several kinds of ſerpents, large ſpiders, and ſcolopendras, have alſo been met with. There are likewiſe many curious fiſhes; though the finny tribe ſeem not to be ſo plentiful on the coaſt as to give any conſiderable aſſiſtance in the way of proviſions for the colony. Some very large ſharks have been ſeen in Port Jackſon, and two ſmaller ſpecies, one named the Port Jackſon ſhark, the other Watt's ſhark. The latter, notwithſtanding its diminutive ſize, the mouth ſcarce exceeding an inch in breadth, is exceſſively voracious. One of them having been taken and flung down upon the deck, lay there quiet for *two hours;* after which Mr Watts's dog happening to paſs by, the fiſh ſprung upon it with all the ferocity imaginable, and ſeized it by the leg in ſuch a manner that the animal could not diſengage himſelf without aſſiſtance.

25
Climate.

The climate of this continent appears not to be diſagreeable, notwithſtanding the violent complaints which ſome have made about it. The heat has never been exceſſive in ſummer, nor is the cold intolerable in winter. Storms of thunder and lightning are frequent; but theſe are common to all warm countries; and it has been ſuppoſed (though upon what foundation does not well appear) that were the country cleared of wood, and inhabited, theſe would in a great meaſure ceaſe. A ſhock of an earthquake has likewiſe been felt; but theſe natural calamities are incident to ſome of the fineſt countries in the world. It is not known whether there are any volcanoes or not.

26
Account of the inhabitants,

The inhabitants of New Holland are by all accounts repreſented as the moſt miſerable and ſavage race of mortals, perhaps, exiſting on the face of the earth. They go entirely naked; and though pleaſed at firſt with ſome ornaments which were given them, they ſoon threw them away as uſeleſs. It does not appear, however, that they are inſenſible of the benefits of clothing, or of ſome of the conveniences which their new neighbours are in poſſeſſion of. Some of them, whom the coloniſts partly clothed, ſeemed to be pleaſed with the comfortable warmth they derived from it; and they all expreſs a great deſire for the iron tools which they ſee their neighbours make uſe of. Their colour, in the opinion of captain Cook, is rather a deep chocolate than a full black; but the filth with which their ſkins are covered, prevents the true colour of them from appearing. At ſome of their interviews with the coloniſts, ſeveral droll inſtances happened of their miſtaking the negroes among the coloniſts for their own countrymen. Notwithſtanding their diſregard for European finery, they are fond of adorning, or rather deforming, their bodies with ſcars; ſo that ſome of them cut the moſt hideous figures that can be imagined. The ſcars themſelves have an uncommon appearance. Sometimes the fleſh is raiſed ſeveral inches from the ſkin, and appears as if filled with wind; and all theſe ſeem to be reckoned marks of honour among them. Some of them perforate the cartilage of the noſe and thruſt a large bone through it, an hideous kind of ornament humorouſly called by the ſailors their *ſprit-ſail yard.* Their hair is generally ſo much clotted with the red gum already mentioned, that they reſemble a mop. They alſo paint themſelves with various colours like moſt other ſavages: they will alſo ſometimes ornament themſelves with beads and ſhells, but make no uſe of the beautiful feathers procurable from the birds of the country. Moſt of the men want one of the fore-teeth in the upper jaw; a circumſtance mentioned by Dampier and other navigators; and this alſo appears to be a badge of honour among them. It is very common among the women to cut off the two lower joints of the little finger; which, conſidering the clumſineſs of the amputating inſtruments they poſſeſs, muſt certainly be a very painful operation. This was at firſt ſuppoſed to be peculiar to the married women, or thoſe who had borne children, but ſome of the oldeſt women were found without this diſtinction, while it was obſerved in others who were very young.

The New Hollanders appear extremely deficient in the uſeful arts. Of the cultivation of the ground they have no notion; nor can they even be prevailed upon to eat bread or dreſſed meat. Hence they depend entirely for ſubſiſtence on the fruits and roots they can gather, with the fiſh they catch. Governor Phillip alſo mentions their frequent ſetting fire to the graſs, in order to drive out the opoſſums and other animals from their retreats; and we have already taken notice of their uſing decoys for quails. As all theſe reſources, however, muſt be at beſt precarious, it is no wonder that they are frequently diſtreſſed for proviſions. Thus, in the ſummer-time they would eat neither the ſhark nor ſting-ray; but in winter any thing was acceptable. A young whale being driven aſhore, was quickly cut in pieces and carried off. They broiled it only long enough to ſcorch the outſide; and in this raw ſtate they eat all their fiſh. They broil alſo the fern root and another whoſe ſpecies is unknown. Among the fruits uſed by them is a kind of wild fig; and they eat alſo the kernels of a fruit reſembling the pine apple. The principal part of their ſubſiſtence, however, is fiſh; and when theſe happened to be ſcarce, they were wont to watch the opportunity when the coloniſts hauled the ſeine, and often ſeized the whole, though a part had formerly been offered or given them. They ſometimes ſtrike the fiſh from the canoes with their ſpears, ſometimes catch them with hooks, and alſo make uſe of nets, contrary to the aſſertion of Dr Hakeſworth, who ſays that none of theſe are to be met with among them. Their nets are generally made of the fibres of the flax plant, with very little preparation, and are

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ſtrong and heavy; the lines of which they are compoſed twiſted like whip-cord. Some of them, however, appear to be made of the fur of an animal, and others of cotton. The meſhes of their nets are made of very large loops artificially inſerted into each other, but without any knots. Their hooks are made of the inſide of a ſhell very much reſembling mother of pearl. The canoes in which they fiſh are nothing more than large pieces of bark tied up at both ends with vines; and conſidering the ſlight texture of theſe veſſels, we cannot but admire the dexterity with which they are managed, and the boldneſs with which they venture in them out to ſea. They generally carry fire along with them in theſe canoes, to dreſs their fiſh when caught. When fiſhing with the hook, if the fiſh appears too ſtrong to be drawn aſhore by the line, the canoe is paddled to the ſhore; and while one man gently draws the fiſh along, another ſtands ready to ſtrike it with a ſpear, in which he generally ſucceeds. There is no good reaſon for ſuppoſing them to be cannibals, and they never eat animal ſubſtances but raw or next to it. Some of their vegetables are poiſonous when raw, but deprived of this property when boiled. A convict unhappily experienced this by eating them in an unprepared ſtate; in conſequence of which he died in 24 hours. The diſlike of the New Hollanders to the European proviſions has already been mentioned: if bread be given them, they chew and ſpit it out again, ſeldom chooſing to ſwallow it. They like ſalt beef and pork rather better; but they could never be brought to taſte ſpirits a ſecond time.

The huts of theſe ſavages are formed in the moſt rude and barbarous manner that can be imagined. They conſiſt only of pieces of bark laid together in the form of an oven, open at one end, and very low, though long enough for a man to lie at full length. There is reaſon, however, to believe, that they depend leſs on them for ſhelter than on the caverns with which the rocks abound. They go invariably naked, as has already been obſerved; though we muſt not imagine that the cuſtom of going naked inures them ſo to the climate as to make them inſenſible to the injuries of the weather. The coloniſts had repeated opportunities of obſerving this, by ſeeing them ſhivering with cold in the winter time, or huddling together in heaps in their huts or in caverns, till a fire could be kindled to warm them. It is probable, however, notwithſtanding their extreme barbarity, that ſome knowledge of the arts will ſoon be introduced among them, as ſome have been ſeen attentively conſidering the utenſils and conveniencies of the Europeans, with a view, ſeemingly of making ſimilar improvements of their own. It has alſo been obſerved, that in ſome things they poſſeſs a very great power of imitation. They can imitate the ſongs and language of the Europeans almoſt inſtantaneouſly, much better than the latter can imitate theirs by long practice. Their talent for imitation is alſo diſcernible in their ſculptures repreſenting men and other animals every where met with on the rocks; which, though rude, are very ſurpriſing for people who have not the knowledge even of conſtructing habitations in the leaſt comfortable for themſelves, or even clothes to preſerve them from the cold.

In their perſons, the New Hollanders are active, vigorous, and ſtout, though generally lean. Dampier aſſerts that they have a dimneſs of ſight; though later navigators have determined this to be a miſtake, aſcribing to them on the contrary, a quick and piercing ſight. Their ſenſe of ſmelling is alſo very acute. One of them having touched a piece of pork, held out his finger for his companion to ſmell with ſtrong marks of diſguſt. The only kind of food they eagerly accept of is fiſh. Their behaviour with regard to the women has been hitherto unaccountable to the coloniſts. Few of them, comparatively ſpeaking, have been ſeen; and theſe have ſometimes kept back with the moſt jealous ſenſibility; ſometimes offered with the greateſt familiarity. Such of the females as have been ſeen, have ſoft and pleaſing voices; and notwithſtanding their barbariſm and exceſſive rudeneſs, ſeem not to be entirely deſtitute of modeſty.

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The New Hollanders generally diſplay great perſonal bravery on the appearance of any danger. An old man, whom governor Phillip had treated with ſome familiarity, took occaſion to ſteal a ſpade; but being taken in the fact, the governor gave him a few ſlight ſlaps on the ſhoulder; on which the old man caught hold of a ſpear, and, coming up to him, ſeemed for ſome time determined to ſtrike, though had he done ſo, it would have been impoſſible for him to eſcape, being then ſurrounded by the officers and ſoldiers. No encounters between parties of the natives themſelves have been obſerved, though from ſome circumſtances it appears that wars are carried on among them. They have more than once been ſeen aſſembled as if bent on ſome expedition. An officer one day met 14 of them marching along in a regular Indian file through the woods, each man having a ſpear in one hand and a ſtone in the other. A chief appeared at their head, who was diſtinguiſhed from the reſt by being painted. They paſſed on peaceably, though greatly ſuperior in numbers to our people. On another occaſion they offered no hoſtilities when aſſembled to the number of 200 or 300, and meeting the governor attended only by a ſmall party. With all their courage, however, they are much afraid of a muſket, and almoſt equally ſo of a red coat, which they know to be the martial dreſs of the Europeans. The miſchief which they have hitherto done has been exerciſed only on ſome ſtraggling convicts, moſt of whom probably have been the firſt aggreſſors.

Though theſe ſavages allow their beards to grow to a conſiderable length, it does not appear that they look upon them to be any ornament, but rather the contrary, as appears from the following inſtance. Some young gentlemen belonging to the Sirius, one day met an old man in the woods with a beard of conſiderable length. This his new acquaintance let him know that they would rid him of, ſtroaking their chins, and ſhowing him the ſmoothneſs of them at the ſame time. At length the old fellow conſented; and one of the youngſters taking a penknife from his pocket, and making the beſt ſubſtitute for lather he could, performed the operation with ſuch ſucceſs that the Indian ſeemed highly delighted. In a few days he paddled alongſide of the Sirius again, pointing to his beard; but could not by any means be prevailed upon to enter the ſhip. On this a barber was ſent down to him, who again freed him from his beard, at which he expreſſed the utmoſt ſatisfaction. It has, however, been found impoſſible to form any kind of permanent intercourſe with the natives, though many attempts have been made for that purpoſe; but in his letter above quoted, governor Phillip declares that he has not the leaſt apprehenſion of their doing any damage to the colony. At firſt the coloniſts imagined the ſpears of the New-Hollanders to be very trivial weapons; but it now appears that they are capable of inflicting very grievous and mortal wounds. They are ſometimes pointed with a ſharp piece of the ſame reed of which the ſhafts are made, but more frequently with the ſharp bone of the ſting-ray. They certainly burn their dead; which perhaps has given riſe to the report of their being canibals. Governor Phillip, obſerving the ground to be raiſed in ſeveral places, cauſed one of theſe tumuli to be opened, in which were found a jaw-bone half conſumed and ſome aſhes. From the manner in which the aſhes are depoſited, it appears that the body has been laid at length, raiſed from the ground a little ſpace, and conſumed in that poſture; being afterwards lightly covered with mould.

The only domeſtic animals they have are the dogs already mentioned, which reſemble the fox-dog of England. In their language theſe animals are called *dingo;* but all other quadrupeds without exception they name *kangaroo.*—They ſeem very little given to thieving in compariſon with the inhabitants of moſt of the South Sea iſlands; and are very honeſt among themſelves, leaving their ſpears and other implements open on the beach, in full and perfect ſecurity of their remaining untouched. They are very expert at throwing their javelins, and will hit a mark with great certainty at a conſiderable diſtance; and it ſeems that ſometimes they kill the kangaroo with this weapon, as a long ſplinter of one of the ſpears was taken out of the thigh of one of theſe animals, the fleſh having cloſed over it completely. The people are more numerous than was at firſt imagined, though ſtill the number of inhabitants muſt be accounted few in compariſon to the extent of country; and there is great reaſon to believe that the interior parts are uninhabited.

The New-Hollanders bake their proviſions by the help of hot ſtones, like the inhabitants of the South-ſea iſlands. They produce fire with great facility according to Captain Cook, but with difficulty according to later accounts, and ſpread it in a wonderful manner. To produce it, they take two pieces of dry ſoft wood; one is a ſtick about eight or nine inches long, the other piece is flat. The ſtick they ſhape into an obtuſe point at one end; and preſſing it upon the other, turn it nimbly, by holding it between both their hands, as we do a chocolate-mill; often ſhifting their hands up, and then moving them down upon it, to increaſe the preſſure as much as poſſible. By this method they get fire in leſs than two minutes, and from the ſmalleſt ſpark they increaſe it with great ſpeed and dexterity. "We have often ſeen (ſays captain Cook) one of them run along the ſhore, to all appearance with nothing in his hand, who ſtooping down for a moment, at the diſtance of every fifty or an hundred yards left fire behind him, as we could ſee, firſt by the ſmoke, and then by the flame along the drift of wood and other litter which was ſcattered along the place. We had the curioſity to examine one of theſe planters of fire when he ſet off, and we ſaw him wrap up a ſmall ſpark in dry graſs, which when he had run a little way, having been fanned by the air that his motion produced, began to blaze; he then laid it down in a place convenient for his purpoſe, incloſing a ſpark of it in another quantity of graſs, and ſo continued his courſe."

Holland in commerce, a fine and cloſe kind of linen, ſo called from its being firſt manufactured in Holland.

HOLLAR (Wenceſlaus), a celebrated engraver, born at Prague in 1607. His parents were in a genteel line of life; and he was at firſt deſigned for the ſtudy of the law. But the civil commotions, which happened in his youth, ruining his family affairs, he was obliged to ſhift for himſelf; and by diſcovering ſome genius for the arts, he was placed with Marian, a very able deſigner and engraver of views. Being himſelf a man of great ingenuity, he profited haſtily from the inſtruction of his tutor. He principally excelled in drawing geometrical and perſpective views and plans of buildings, ancient and modern cities and towns; alſo landſcapes, and every kind of natural and artificial curioſities; which he executed with a pen in a very peculiar ſtyle, excellently well adopted to the purpoſe. He travelled through ſeveral of the great cities of Germany; and, notwithſtanding all his merit, met with ſo little encouragement, that he found it very difficult to ſupport himſelf. The earl of Arundel being in Germany took him under his protection, brought him to England, and recommended him to the favour of Charles I. He engraved a variety of plates from the Arundel collection, and the portrait of the earl himſelf on horſeback. The civil wars, which happened ſoon after in England, ruined his fortune. He was taken priſoner, with ſome of the royal party, and with difficulty eſcaped; when he returned to Antwerp and joined his old patron the earl of Arundel. He ſettled in that city for a time, and publiſhed a conſiderable number of plates; but his patron going to Italy ſoon after for the benefit of his health, Hollar fell again into diſtreſs, and was obliged to work for the print and bookſellers of Antwerp at very low prices. At the reſtoration he returned into England; where, though he had ſufficient employment, the prices he received for his engravings were ſo greatly inadequate to the labour neceſſarily required, that he could but barely ſubſiſt; and the plague, with the ſucceeding fire of London, putting for ſome time an effectual ſtop to buſineſs, his affairs were ſo much embarraſſed, that he was never afterwards able to improve his fortune. It is ſaid that he uſed to work for the bookſellers at the rate of fourpence an hour; and always had an hour-glaſs before him. He was ſo ſcrupulouſly exact, that when obliged to attend the calls of nature, or whilſt talking, though with the perſons for whom he was working and about their own buſineſs, he conſtantly laid down the glaſs, to prevent the ſand from running. Nevertheleſs, all his great induſtry, of which his numerous works bear ſufficient teſtimony, could not procure him a ſufficient maintenance. It is melancholly to add, that on the verge of his 70th year, he was attached with an execution at his lodgings in Gardner's lane, Weſtminſter; when he deſired only the liberty of dying in his bed, and that he might not be removed to any other priſon than the grave: a favour which it is uncertain whether he obtained or not. He died, however, in 1677.—His works amount nearly to 24,000 prints according to Vertue's Catalogue; and the lovers of the art are always zealous to collect them. Generally ſpeaking, they are etchings performed almoſt entirely with the point; and their merits are thus characterized by Mr Strutt: "They poſſeſs great ſpirit, with aſtoniſhing freedom and lightneſs, eſpecially when we conſider how highly he has finiſhed ſome of them. His views of abbeys, churches, ruins, &c. with his ſhells, muffs, and every ſpecies of ſtill life, are admirable; his landſcapes frequently have great merit; and his diſtant views of towns and cities are not only executed in a very accurate, but a very pleaſing manner." A ſomewhat colder character is given of them by Mr Gilpin in his Eſſay on Prints: "Hollar gives us views of particular places, which he copies with great truth, unornamented as he found them. If we are ſatisfied with exact repreſentations, we have them no where better than in Hollar's works: but if we expect pictures, we muſt ſeek them elſewhere. Hollar was an antiquarian and a draughtſman; but ſeems to have been little acquainted with the principles of painting. Stiffneſs is his characteriſtic, and a painful exactneſs void of taſte. His larger views are mere plans. In ſome of his ſmaller, at the expence of infinite pains, ſomething of an effect is ſometimes produced. But in general, we conſider him as a repoſitory of curioſities, a record of antiquated dreſſes, aboliſhed ceremonies, and edifices now in ruins."

HOLLOA, in the ſea-language, an exclamation of anſwer, to any perſon who calls to another to aſk ſome queſtion, or to give a particular order. Thus, if the maſter intends to give any order to the people in the main-top, he previouſly calls *Main top, hoay!* to which they anſwer, *Holloa!* to ſhow that they hear him, and are ready. It is alſo the firſt anſwer in hailing a ſhip at a diſtance. See HAILING.

HOLLY, in botany. See ILEX.

*Sea-*HOLLY. See ERYNGIUM.

HOLM (Sax. *hulmus, inſula amnica)*, denotes an iſle or fenny ground, according to Bede: or a river-iſland. And where any place is called by that name, and this ſyllable is joined with any other in the names of places, it ſignifies a place ſurrounded with water; as the Flatholmes and Stepholmes in the Severn near Briſtol: but if the ſituation of the place is not near the water, it may then ſignify a hilly place; *holm* in Saxon, ſignifying alſo "a hill or cliff."

HOLOCAUST (formed from ολος "whole," and καιω "I conſume with fire)," a kind of ſacrifice, wherein the whole offering is burnt or conſumed by fire, as an acknowledgement that God, the creator, preſerver, and lord of all, was worthy of all honour and worſhip, and as a token of mens giving themſelves entirely up to him. It is called alſo in Scripture a *burnt-offering*.—Sacrifices of this ſort are often mentioned by the heathens as well as Jews; particularly by Xenophon, *Cyropæd. lib.* viii. p. 464. *ed. Hutchinſ.* 1738, who ſpeaks of ſacrificing holocauſts of oxen to Jupiter, and of horſes to the ſun: and they appear to have been in uſe long before the inſtitution of the other Jewiſh ſacrifices by the law of Moſes; (ſee Job i. 5. xlii. 8. and Gen. xxii. 13. viii. 20). On this account, the Jews, who would not allow the Gentiles to offer on their altar any other ſacrifices peculiarly enjoined by the law of Moſes, admitted them by the Jewiſh prieſts to offer holocauſts; becauſe theſe were a ſort of ſacrifices prior to the law, and common to all nations. During their ſubjection to the Romans, it was no uncommon thing for thoſe Gentiles to offer ſacrifices to the God of Iſrael at Jeruſalem. Holocauſts were deemed by the Jews the moſt excellent of all their ſacrifices. It is ſaid, that this kind of ſacrifice was in common uſe among the heathens, till Prometheus introduced the cuſtom of burning only a part, and reſerving the remainder for his own uſe. See SACRIFICE.

HOLOFERNES, lieutenant-general of the armies of Nebuchadonoſor king of Aſſyria, who having in a remarkable encounter overcome Arphaxad king of the Medes, ſent to all the neighbouring nations with an intention of obliging them this way to ſubmit to his empire, pretending that there could be no power capable of reſiſting him. At the ſame time Holofernes, at the head of a powerful army, paſſed the Euphrates, entered Cilicia and Syria, and ſubdued almoſt all the people of theſe provinces.

Being reſolved to make a conqueſt of Egypt, he advanced towards Judæa, little expecting to meet with any reſiſtance from the Jews. In the mean time, he was informed that they were preparing to oppoſe him; and Achior the commander of the Ammonites, who had already ſubmitted to Holofernes, and was with ſome auxiliary troops in his army, repreſented to him that the Hebrews were a people protected in a particular manner by God Almighty ſo long as they were obedient to him; and therefore he could not flatter himſelf with expectations of overcoming them, unleſs they had committed ſome offence againſt God, whereby they might become unworthy of his protection. Holofernes, diſregarding this diſcourſe, commanded Achior to be conveyed within ſight of the walls of Bethulia, and tied to a tree, and left there, whither the Jews came and looſed him.

In the mean time Holofernes formed the ſiege of Bethulia; and having cut off the water which ſupplied the city, and ſet guards at the only fountain which the beſieged had near the walls, the inhabitants were ſoon reduced to extremity, and reſolved to ſurrender, if God did not ſend them ſuccour in five days. Judith, being informed of their reſolution, conceived the deſign of killing Holofornes in his camp. She took her fineſt clothes, and went out of Bethulia with her maid-ſervant; and being brought to the general, ſhe pretended that ſhe could no longer endure the ſins and exceſſes of the Jews, and that God had inſpired her with the deſign of ſurrendering herſelf to him.—As ſoon as Holofernes, ſaw her, he was taken with her beauty; and ſome days after invited her to a great feaſt, which he prepared for the principal officers of his army. But he drank ſo much wine, that ſleep and drunkenneſs hindered him from ſatisfying his paſſion. Judith, who in the night was left alone in his tent, cut off his head with his own ſword; and departing with her ſervant from the camp, ſhe returned to Bethulia with the head of Holofernes. As ſoon as it was day, the beſieged made a ſally upon the enemies, who going into their general's tent, found his headleſs carcaſe wallowing in its own blood. They then diſcerned that Judith had deceived them, and fled with precipitation, leaving the camp abounding with rich ſpoils: the Jews purſued them, killed a great number of them, and returned loaded with booty.

There is a great diverſity of opinions concerning the time when this war between Holofernes and the Jews happened. Some date it from the captivity of Babylon, in the reign of Manaſſeh, and pontificate of Eliakim the high-prieſt; others place it at ſome time after the captivity; and ſome doubt the truth of the whole tranſaction. See the article JUDITH.

HOLOGRAPHUM (compoſed of ολος "all," and γραφω "I write"), in the civil law, ſomething written wholly in the hand-writing of the perſon who ſigns it. The word is chiefly uſed in ſpeaking of a teſtament written wholly in the teſtator's own hand.

The Romans did not approve of holographic teſtaments; and, though Valentinian authoriſed them by a novel, they are not uſed where the civil law is in full force.

HOLOSTEUM, in botany: A genus of the trigynia order, belonging to the triandria claſs of plants; and in the natural method ranking under the 22d order, *Caryophyllei*. The calyx is pentaphyllous; the petals five, the capſule unilocular, and nearly cylindrical, opening at top.

HOLOTHURIA, in zoology, a genus belonging to the order of vermes molluſca. The body detached, naked, gibbous, terminated by the anus. Many tentacula at the other extremity, ſurrounding the mouth. There are nine ſpecies, all inhabitants of the ocean. The following deſcriptions of three ſpecies are given by Mr Barbut.

Plate CCXXXV

1. The tremula, or quivering holothuria, "commonly meaſures eight inches in length when dead; but alive it extends itſelf to more than a foot, or contracts its body into a ball. Its figure is cylindric, the diameter of which is every way equal to an inch and a few lines. The back of a dark brown proudly bears a variety of fleſhy pyramid-like nipples, of a dark colour likewiſe at their baſis, but white at their apex. They are obſerved to be of two different ſizes; the larger occupy the length of the back, in number 14 on each ſide, at the diſtance of ſix lines one from the other, when the holothuria is contracted, but the intervening ſpace is full eight lines when the animal is extended. Others like theſe are placed here and there promiſcuouſly. The leſs are ſcattered in like manner, without order, in every part of the back. Out of them all exſudes a whitiſh mucilage ſerving to lubricate the body. Hence all the foreſaid nipples ſeem to be ſo many glands furniſhed with an excretory duct, the aperture of which is ſo minute as not to be diſcoverable by the help of a common glaſs. That they are moreover provided with various muſcles follows hence, that the holothuria can raiſe and obliterate them at pleaſure. While the large papillæ are quite erect, their axis and the diameter of their baſe meaſures three lines. The belly or part oppoſite to the back in the holothuria is of a pale brown and ſet all over with cylindric tentacula, in ſuch numbers that the head of a pin could ſcarce find room between. Their diameter is not much above a line, and their length is that of four lines. They are of a ſhining whiteneſs, except the extremity which is of a dark colour, and ſhaped like a ſocket. By the help of theſe tentacula the holothuria fixes its body at the bottom of the ſea, ſo as not to be eaſily forced away by tempeſts, which would otherwiſe happen the more frequently, as this zoophite dwells near the ſhores where the water ſcarce riſes to a fathom's height. Now if it adheres to other bodies by means of its ventral tentacula, their point muſt neceſſarily have the form of a ſocket, as the cuttle-fiſh, ſea-urchins, and ſtar-fiſh have theirs ſhaped, by which they lay hold of any other body. From this ſituation of the holothuria at the bottom of the ſea, which it alſo retains when kept in a veſſel filled with ſea-water, it muſt be evident to any one, that I have not groundleſsly determined which was its back, and which its belly, which otherwiſe in a cylindric body would have been a difficult taſk. But as all animals uniformly walk or reſt upon their bellies, and the holothuria has likewiſe that part of its body turned to the earth on which the cylindric tentacula are to be ſeen, it is clear that part is the abdomen or belly of this zoophite. However, both the abdominal and dorſal tentacula are raiſed and obliterated at the animal's pleaſure; from which it is no light conjecture to conclude, that they are furniſhed with elevating and depreſſing muſcles, and particularly becauſe all the foreſaid tentacula diſappear after the animal's death: and hence it farther appears, that all naturaliſts have given the repreſentation of a dead holothuria, ſeeing they have aſſigned it no tentacula. I entertain ſome doubt whether the illuſtrious Linnæus himſelf did not draw his generical character of the holothuria from a dead ſubject, as he makes no mention of theſe tentacula."

2. The phyſalis, or bladder-ſhaped holothuria. The body of this ſpecies is oval, approaching to triangular, of a gloſſy tranſparency; the back ſharp edged, of a dark green colour, whence run out a number of ſinews; anteriorly the body is of a reddiſh hue. The trunk ſpiral, reddiſh towards the thicker end. Many tentacula of unequal length under that thicker end; the ſhorter ones are taper and thicker, the middle ones capillary, the point clay colour and in ſhape like a ball; the reſt which are longer are filiform, of which the middlemoſt is thicker and twice as long. Brown, in his Jamaica, calls it a diaphanous bladder with numerous tentacula repreſenting a man's belly; above it is furniſhed with a comb full of cells; under the other extremity hang a number of branchy tentacula. It inhabits the ſeas.

3. The Pentactes, or five-rowed holothuria, has the mouth encompaſſed with tentacula, the body bearing tentacula five different ways. The animal is of a red colour, nearly oval, or ſomewhat cylindrical, aſſuming various ſhapes. The mouth is ſet round with ten rays briſtly at the points. The body longitudinally doted in five places with clay-coloured hollow warts, ſituate two together. It inhabits the ſea of Norway, taking in and caſting out again the water, as it either ſwims or dives to the bottom.

HOLSTEIN, a duchy of Germany, bounded by the German ocean on the weſt; the Baltic, or the gulph of Lubeck, on the eaſt; the duchy of Mecklenburg on the ſouth-eaſt; that of Bremen, with the river Elbe, on the ſouth-weſt; and Lunenburg, with the territory of Hamburgh, on the ſouth. Its greateſt length is about 80 miles, and its breadth 60. The dioceſe of Eutin, and the county of Ranzau, though they make a part of the duchy of Holſtein, yet being lands belonging to the empire and circle, ſhall be deſcribed ſeparately.

A great part of this country conſiſts of rich marſh-land, which being much expoſed to inundations both from the ſea and rivers, dykes have been raiſed at a great expence to guard and defend them. The paſtures in the marſhes are ſo rich, that cattle are bred in vaſt numbers and fattened in them, and great quantities of excellent butter and cheeſe made of their milk. They are alſo very fruitful in wheat, barley, peaſe, beans, and rape-ſeed. In the more barren, ſandy, and heathy parts of the country, large flocks of ſheep are bred and fed: nor are orchards wanting, or woods, eſpecially of oak and beech; nor turf, poultry, game, and wild-fowl. Here is a variety both of ſea and river fiſh; and the beef, veal, mutton, and lamb, are very fat and palatable. Holſtein is alſo noted for beautiful horſes. The gentry uſually farm the cows upon their eſtates to a Hollander, as he is called, who for every cow pays from ſix to ten rix-dollars; the owner providing paſture for them in ſummer, and ſtraw and hay in winter. It is no uncommon thing here to drain the ponds and lakes once in three or four years, and ſell the carp, lampreys, pike, and perch, found in them; then ſow them for ſeveral years after with oats, or uſe them for paſture; and after that lay them under water again, and breed fiſh in them. There are hardly any hills in the country; but ſeveral rivers, of which the principal are the Eyder, the Stor, and the Trave. The duchy contains about 30 towns great and ſmall: moſt part of the peaſants are under villenage, being obliged to work daily for their lords, and not even at liberty to quit their eſtates. The nobility and the proprietors of manors are poſſeſſed of the civil and criminal juriſdiction, with other privileges and exemptions. Formerly there were diets, but now they ſeem to be entirely laid aſide: meetings, however, of the nobility are ſtill held at Kiel. The predominant religion here is Lutheraniſm, with ſuperintendencies as in other Lutheran countries. In ſeveral places the Jews are allowed the exerciſe of their religion. At Gluckſtadt and Altena are both Calviniſt and Popiſh churches; and at Kiel a Greek Ruſſian chapel. Beſides the Latin ſchools in the towns, at Altena is a gymnaſium, and at Kiel an univerſity. Notwithſtanding this country's advantageous ſituation for commerce, there are few manufactures and little trade in it. Hamburg and Lubec ſupply the inhabitants with what they want from abroad; from whence and Altena they export ſome grain, malt, grots, ſtarch, buck-wheat, peaſe, beans, rapeſeed, butter, cheeſe, ſheep, ſwine, horned cattle, horſes, and fiſh. The manufactures of the duchy are chiefly carried on at Altena, Kiel, and Gluckſtadt. The duchy of Holſtein conſiſts of the ancient provinces of Holſtein, Stormar, Ditmarſh, and Wagria. It belongs partly to the king of Denmark and partly to the dukes of Holſtein Gottorf and Ploen. Anciently the counts of Holſtein were vaſſals of the dukes of Saxony; but afterwards they received the inveſtiture of their territories from the emperor, or the biſhops of Lubec in the emperor's name, though now the inveſtiture is given by the emperor in perſon. The king of Denmark appoints a regency over his part of Holſtein and the duchy of Sleſwick, which has its office at Gluckſtadt. The ſeat of the great duke's privy council and regency-court, together with the chief conſiſtory, which is united to it, is at Kiel: there are many inferior courts and conſiſtories, from which an appeal lies to the higher. In the duchy of Holſtein, the government of the convents and nobility is alternately in the king and duke for a year, from Michaelmas to Michaelmas. The perſon in whom the government is lodged adminiſters it by his regency. In ſome caſes an appeal lies from this court to the Aulic council or chamber at Wetzlar; the convents, the nobility, and the proprietors of manors in the country have a civil and criminal juriſdiction over their eſtates. The revenues of the ſovereigns ariſe principally from their demeſnes and regalia; beſides which, there is a land and ſeveral other taxes and impoſts. The duke's income, ſetting aſide his ducal patrimony, has been eſtimated at 70,000 or 80,000 pounds. The king uſually keeps here ſome regiments of foot and one of horſe. With reſpect to the duke's military force, it amounts to about 800 men. The king, on account of his ſhare in this country, ſtyles himſelf *duke of Holſtein, Stormar*, and *Ditmarſh*. The dukes both of the royal and princely houſe ſtyle themſelves *heirs of Norway, dukes of Sleſwick, Holſtein, Stormar*, and *Ditmarſh*, and counts of *Oldenburg* and *Delmenhorſt*. On account of Holſtein, both the king of Denmark and the grand duke have a ſeat and voice in the college of the princes of the empire, and in that of the circle. Together with Mecklenburg they alſo nominate an aſſeſſor for this circle in the Aulic chamber. The matricular aſſeſſment of the whole duchy is 40 horſe and 80 foot, or 8000 florins; to the chamber of Wetzlar both princes pay 189 rix-dollars, 31 kruitzers. In 1735, duke Charles Frederic of Holſtein Gottorf founded an order of knighthood here, viz. that of St Anne, the enſign of which is a red croſs, enamelled, and worn pendant at a red ribbon edged with yellow.—The principal places of that part of the duchy belonging to the king of Denmark and the duke of Ploen are Gluckſtadt, Itzhoe, Rendſburg, and Ploen; and that part belonging to the great duke are Kiel, Oldenburg, Preetz, and Altena.

HOLSTENIUS (Lucas), an ingenious and learned German, born at Hamburg in 1596, was bred a Lutheran; but being converted to popery by father Sirmond the Jeſuit, he went to Rome, and attached himſelf to cardinal Francis Barberini, who took him under his protection. He was honoured by three popes; Urban VIII. gave him a canonry of St Peter's; Innocent X. made him librarian of the Vatican; and Alexander VII. ſent him in 1655 to queen Chriſtina of Sweden, whoſe formal profeſſion of the Catholic faith he received at Inſpruck. He ſpent his life in ſtudy, and was very learned both in ſacred and profane antiquity. He died in 1661; and though he was not the author of any great works, his notes and diſſertations on the works of others have been highly eſteemed for the judgment and preciſion with which they are drawn up.

HOLT (Sir John), knight, eldeſt ſon of Sir Thomas Holt, ſerjeant at law, was born in 1642. He entered himſelf of Gray's Inn in 1658; and applied to the common law with ſo much induſtry, that he ſoon became a very eminent barriſter. In the reign of James II. he was made recorder of London, which office he diſcharged with much applauſe for about a year and an half; but loſt his place for refuſing to expound the law ſuitably to the king's deſigns. On the arrival of the prince of Orange, he was choſen a member of the convention parliament, which afforded him a good opportunity of diſplaying his abilities; ſo that, as ſoon as the government was ſettled, he was made lord chief juſtice of the court of king's bench, and a privy counſellor. He continued chief juſtice for 22 years, with great repute for ſteadineſs, integrity, and thorough knowledge in his profeſſion. Upon great occaſions he aſſerted the law with intrepidity, though he thereby ventured to incur by turns the indignation of both the houſes of parliament. He publiſhed ſome reports, and died in 1709.

Holt (Sax.) "a wood;" wherefore the names of towns beginning or ending with *holt*, as *Buck-holt*, &c. denote that formerly there was great plenty of wood in thoſe places.

HOLY. See Holiness.

HOLY-GHOST, or Holy Spirit. The Spirit of God. See Trinity.

Order of the Holy Ghost, the principal military order in France, inſtituted by Henry III. in 1569. It conſiſts of 100 knights, who are to make proof of their nobility for three deſcents. The king is the grand-maſter or ſovereign; and as ſuch takes an oath on his coronation-day to maintain the dignity of the order.

The knights wear a golden croſs, hung about their necks by a blue ſilk ribbon or collar. But before they receive the order of the Holy-Ghoſt, that of St Michael is conferred as a neceſſary degree; and for this reaſon their arms are ſurrounded with a double collar.

HOLYHEAD, a town and cape of the iſle of Angleſea in Wales, and in the Iriſh channel, where people uſually embark for Dublin, there being three packet-boats that ſail for that city every Monday, Wedneſday, and Friday, wind and weather permitting. It is 276 miles from London, and has a very convenient harbour for the northern trade, when taken ſhort by contrary winds. It is ſituated near the extremity of the Iſle, and is joined to the north-weſt part of it by a ſtone bridge of one arch. It has a ſmall market on Saturdays. The pariſh is about five or ſix miles long, and two or three broad, bounded nearly by the ſea. The church ſtands above the harbour, within an old quadrangular fortification, with a baſtion at each corner, built about 450. On a mountain near it is another old fortification, called Turris Munimentum, which is an old ſtone wall without mortar, and in its centre is a ſmall turret, and contains a well of water. Holyhead was frequently formerly viſited by Iriſh rovers, and was defended as a place of conſequence. There are ſeveral remains of old fortifications and Druidical antiquities in its neighbourhood, as well as chapels of religious worſhip. The pariſh church of Holyhead was built in the reign of Edward III. and is in the form of a croſs, with a porch and ſteeple very antique. There was an old chapel near the church, now converted into a ſchool-houſe. A ſalt-houſe was erected on an iſland in the harbour in queen Anne's reign, but it is now in ruins. The town is little more than a fiſhing town, rendered conſiderable by being the place of paſſage to Ireland. It has three good inns. The paſſage hence to Ireland is in general about twelve hours. There is no freſh water here except from rain, nor any bread ſold but what comes from Ireland. A bath and aſſembly-room were erected here in 1770. Under the mountains that overhang the town is a large cavern in the rock, ſupported by natural pillars, called the Parliament-houſe, acceſſible only by boats, and the tide runs into it. If this harbour was properly repaired, and ware-houſes built, it would be very convenient for the Iriſh to import ſuch of their goods as pay Engliſh duty, it being but a few hours ſail from Dublin. Beſides, the Dublin merchants might come over with the packet to ſee their goods landed. The commodities are, butter, cheeſe, bacon, wild-fowl, lobſters, crabs, oyſters, razor-fiſh, ſhrimps, herrings, cod-fiſh, whitings, whiting-pollacks, cole-fiſh, ſea-tenches, turbots, ſoles, flounders, rays, and plenty of other fiſh. On the rocks the herb grows of which they make kelp, a fixed ſalt uſed in making glaſs, and in alum works. In the neighbourhood there is a large vein of white fullers earth and another of yellow, which might be uſeful to fullers. On the iſle of Skerries, nine miles to the north, is a light-houſe, which may be ſeen 24 miles off. Large flocks of puffins are often ſeen here; they all come in one night, and depart in the ſame manner.

HOLY-Island, a ſmall iſland lying on the coaſt of England, 10 miles ſouth-eaſt of Berwick, in Northumberland. Bede calls it a *ſemi-iſland*, being, as he obſerves, twice an iſland and twice a continent in one day: for at the flowing of the tide, it is encompaſſed by water; and at the ebb, there is an almoſt dry paſſage, both for horſes and carriages, to and from the main land; from which, if meaſured in a ſtraight line, it is diſtant about two miles eaſtward; but on account of ſome quickſands paſſengers are obliged to make ſo many detours, that the length of the way is nearly doubled. The water over theſe flats at ſpring tides is only ſeven feet deep.—This iſland was by the Britons called *Inis Medicante*; alſo *Lindiſfarne*, from the ſmall rivulet of Lindi or Landi, which here runs into the ſea, and the Celtic word *Fahren* or "receſs;" and on account of its being the habitation of ſome of the firſt monks in this country, it afterwards obtained its preſent name of *Holy-Iſland*. It meaſures from eaſt to weſt about two miles and a quarter, and its breadth from north to ſouth is ſcarcely a mile and an half. At the north-weſt part there runs out a ſpit of land of about a mile in length. The monaſtery is ſituated at the ſouthermoſt extremity; and at a ſmall diſtance north of it ſtands the village. On this iſland there is plenty of fiſh and fowl; but the air and ſoil are bad. There is not a tree on the iſland. The village which ſtands on a riſing ground, conſiſts of but a few ſcattered houſes, chiefly inhabited by fiſhermen; and it has two inns. The north and eaſt coaſts are formed of perpendicular rocks, the other ſides ſink by gradual ſlopes to the ſands. There is a commodious harbour defended by a block-houſe; which laſt was ſurpriſed and taken in 1715, but was ſoon inveſted and retaken.

Holy-iſland, though really part of Northumberland, belongs to Durham; and all civil diſputes muſt be determined by the juſtices of that county.—It was a very ancient epiſcopal ſeat. Ardan the firſt biſhop, after reſiding in it 14 years, died and was buried here A. D. 651. Finan, his ſucceſſor, built a wooden church, thatched with reeds, but before the end of the century covered with lead by biſhop Eardbert. St Cuthbert, who from a poor ſhepherd became monk of Melroſs 15 years, was prior here 12 more, when he retired to one of the barren Farn rocks, from whence he was called to this ſee, which he held only two years, and returned to his retirement, where he died, and was buried at the eaſt end of his oratory, where his ſtone coffin is ſtill ſhown. His body was found freſh 11 years after his death. Lindisfarn was ruined by the Danes, A. D. 793, when the monks carried his body about for ſeven years, and at laſt ſettled at Cheſter-le-ſtreet, whether the ſee was tranſlated, and where it continued many years. On a ſecond deſtruction of the monaſtery by the Danes they were removing to Rippon, but ſtopped by a miracle at Durham, where the ſaint continued till the reformation, when his body was found entire, and privately buried in a wooden coffin, as ſome pretend, near the clock, but more probably in the ground under where his ſhrine ſtood. The entrochi found among the rocks at Landisfarn are called St Cuthbert's beads, and pretended to be made by him in the night. Eighteen biſhops ſat here till the removal of the ſee to Cheſter, which had eight more till the removal to Durham, A. D. 995. Lindisfarn became a cell to that Benedictine monaſtery, valued at 48 l. *per ann.* The north and ſouth walls of the church are ſtanding, much inclined; part of the weſt end remains, but the eaſt is down. The columns of the nave are of four different ſorts, 12 feet high, and 5 feet diameter, maſſy and richer than thoſe of Durham; the baſes and capitals plain, ſupporting circular arches. Over each arch are large windows in pairs, ſeparated by a ſhort column, and over theſe are ſmaller ſingle windows. In the north and ſouth walls are ſome pointed arches. The length of the body is 138 feet, breadth 18 feet, and with the two ailes 36 feet; but it may be doubted whether there ever was a tranſept. One arch of the centre tower remains adorned at its entrance from the nave with Saxon zigzag. Somewhat to the eaſt is the baſe of a croſs, and to the weſt the preſent pariſh-church (A).

Holy-Rood Day, a feſtival obſerved by the Roman catholics, in memory of the exaltation of our Saviour's croſs. See Cross and Exaltation.

Holywell, a town of North Wales, in the county of Flint. It is a place of great note, for the well of St Winnifred, who is reputed a virgin martyr; and it is much frequented by people that come to bathe in it, as well as by popiſh pilgrims out of devotion. The ſpring

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(A) A reference was inadvertently made to this article for a deſcription of BAMBOROUGH, as if it had been ſituated upon, or belonging to, *Holy-Iſland.*—Bamborough lies ſeveral miles to the ſouth, and is ſituated on the main land. The town is now an inconſiderable village; but it once was a royal borough, and ſent two members: It even gave name to a large tract extending ſouthward, which was called *Bamboroughſhire.* It had alſo three religious foundations; a houſe of friars preachers founded by Henry III. a cell of canons regular of St Auſtin, and an hoſpital. Its very ancient caſtle ſtands on an almoſt perpendicular rock cloſe to the ſea, and acceſſible only on the ſouth-eaſt ſide, on a ſpot where, according to the monkiſh hiſtorians, there ſtood the caſtle or palace of the kings of Northumberland; built, as it is ſaid, by king Ida, who began his reign about the year 559. Part of the preſent ruins are by ſome ſuppoſed to be the remains of king Ida's work. The ancient name of this place was, it is ſaid, *Bebbanborough*; whoſe name Cambden, from the authority of Bede, imagines, borrowed from Bebba, Ida's queen: but the author of the additions to that writer is of a contrary opinion, as in the Saxon copy it is called *Cynclicanberg*, or the "royal manſion." According to Florilegus, king Ida at firſt fenced it only with a wooden incloſure, but afterwards ſurrounded it with a wall. It is thus deſcribed by Roger Hoveden, who wrote in the year 1192: "Bebba is a very ſtrong city, but not exceedingly large; containing not more than two or three acres of ground. It has but one hollow entrance into it, which is admirably raiſed by ſteps. On the top of the hill ſtands a fair church; and in the weſtern point is a well curiouſly adorned, and of ſweet clean water." This caſtle was beſieged anno 642 by Penda, the Pagan, king of the Mercians, who, as the ſtory goes, attempted to burn it: for which purpoſe he laid vaſt quantities of wood under the walls, and ſet fire to it as ſoon as the wind was favourable; but no ſooner was it kindled, than by the prayers of St Adian, the wind changed and carried the flames into his camp, ſo that he was obliged to raiſe the ſiege. In 710, king Oſred, on the death of Alfred his father, took ſhelter in this caſtle with Brithric, his tutor or guardian; one Edulph having ſeized the crown, by whom, with his partiſans, they were unſucceſsfully beſieged. Brithric made ſo gallant a defence, that the ſiege was turned into a blockade, which gave the loyal ſubjects time to arm in defence of their young king. On their marching hither to his relief, Edulph fled but was followed, taken, and put to death by Brithric, who thereby ſecurely ſeated Oſred on the throne, when this caſtle became his palace. In the reign of Egbert, Kenulph biſhop of Lindisfarn was confined here 30 years from 750 to 780. In 933, it was plundered and totally ruined by the Danes; but being of great importance in defending the northern parts againſt the continual incurſions of the Scots, it was ſoon after repaired, and made a place of conſiderable ſtrength. It is ſaid to have been in good repair at the time of the conqueſt, when it was probably put into the cuſtody of ſome truſty Norman, and had in all likelihood ſome additions made to its works; and this is the more probable, as the preſent area, contained within its walls, meaſures upwards of 80 acres, inſtead of three, as deſcribed by Hoveden. About the year 1095 it was in the poſſeſſion of Robert de Mowbray earl of Northumberland, who engaging in ſome treaſonable practices againſt William Rufus, that king laid ſiege to it, and obliged it to ſurrender. In the next reign it was entruſted by Henry I. to Euſtace Fitz John, who was diſpoſſeſſed of it and his other employments by king Stephen ſpring guſhes forth with ſuch impetuoſity, that at a ſmall diſtance it turns ſeveral mills. Over the ſpring is a chapel built upon pillars, and on the windows are painted the hiſtory of St Winnifred's life. There is a moſs about the well, which ſome fooliſhly imagine to be St Winnifred's hair. W. Long. 3. 15. N. Lat. 54. 23.

HOLYOAK (Francis), author of the Latin dictionary, became rector of South-ham in Warwickſhire, in 1604; and being greatly eſteemed, was choſen member of the convocation in the firſt year of Charles I.'s reign. He ſuffered much for the king; and died in 1653, aged 87. His ſon Thomas made enlargements to the ſaid Dictionary.

HOLYWOOD (John), or HALIFAX, or *Sacroboſco*, was, according to Leland, Bale, and Pitts, born at Halifax in Yorkſhire; according to Stainhurſt, at Holywood near Dublin; and, according to Dempſter and Mackenzie, in Nithſdale in Scotland. The laſt-mentioned author informs us, that, having finiſhed his ſtudies, he entered into orders, and was made a canon regular of the order of St Auguſtin in the famous monaſtery of Holywood in Nithſdale. The Engliſh biographers, on the contrary, tell us, that he was educated at Oxford. They all agree, however, in aſſerting that he ſpent moſt of his life at Paris; where, ſays Mackenzie, he was admitted a member of the univerſity on the fifth of June in the year 1221, under the ſyndics of the Scottiſh nation; and ſoon after elected profeſſor of mathematics, which he taught for many years with applauſe. We are told by the ſame author, that he died in 1256, as appears from the inſcription on his monument in the cloiſters of the convent of St Maturine at Paris. Holywood was certainly the firſt mathematician of his time. He was cotemporary with Roger Bacon, but probably older by about 20 years. He wrote, 1. *De ſphæra mundi*; often reprinted, and illuſtrated by various commentators. 2. *De anni ratione, ſeu de computo eccleſiaſtico.* 3. *De algoriſmo*, printed with *Comm. Petri Cirvilli Hiſp.* Paris 1498.

HOMAGE, in law, is the ſubmiſſion, loyalty, and ſervice, which a tenant promiſed to his lord when he was firſt admitted to the land which he held of the lord in fee: alſo that owing to a king, or to any ſuperior.

HOMBERG (William), a celebrated phyſician, chemiſt, and philoſopher, was the ſon of a Saxon gentleman, and born in Batavia, in the Eaſt Indies, in 1652. His father afterwards ſettling at Amſterdam, William there proſecuted his ſtudies; and from thence removed

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Stephen, that king being jealous of his attachment to Maud, daughter of Henry I. Irritated at this, Fitz John delivered the caſtle of Alnwick to David king of Scotland, and brought to his aid all the forces he could raiſe; he was, however, afterwards reconciled to king Stephen, and held the manors of Burg and Knareſborough in Yorkſhire, but never recovered the government of this caſtle.

In the 16th of Henry II. ſome great repairs ſeem to have been done here, as in Madox's hiſtory of the exchequer, under the article of Amercements, it appears one William, ſon of Waldef, was fined five marks for refuſing his aſſiſtance in the king's works at Baenburg caſtle. Its keep is ſuppoſed to have been the work of this reign.

Edward I. ſummoned Baliol to meet him here 1296; and on his refuſal invaded Scotland, and took him priſoner. Edward II. ſheltered Gaveſton here 1310. It was taken by the Yorkiſts after the battle of Hexham. In the reign of Elizabeth, Sir John Foſter, warden of the marches, was governor of it, and made a knight banneret after the battle of Muſſelburgh; and his grandſon John obtained a grant of both caſtle and manor from James I. His deſcendant Thomas forfeited it in 1715; but his maternal uncle Nathaniel Crew biſhop of Durham purchaſed and bequeathed them to unconfined charitable uſes. The ruins are ſtill conſiderable; but many of them now filled with ſand, caught up by the winds which rage here with great violence, and carried to very diſtant places. The remains of a great hall are very ſingular; it had been warmed by two fire places of a vaſt ſize, and from the top of every window ran a flue like that of a chimney, which reached the ſummits of the battlements. Theſe flues ſeem deſigned as ſo many ſupernumerary chimnies to give vent to the ſmoke that the immenſe fires of thoſe hoſpitable times filled the rooms with; for halls ſmoky, but filled with good cheer, were in thoſe days thought no inconvenience. In the year 1757, the truſtees for Lord Crew's charity began the repairs of the keep or great tower; the direction and management being committed to Dr Sharp archdeacon of Durham, one of their number; who has made a moſt judicious and humane application of his lordſhip's generous bequeſt. The walls are from 9 to 12 feet thick. The upper parts of the building have been formed into granaries; whence, in times of ſcarcity, corn is ſold to the indigent without any diſtinction at four ſhillings per buſhel. A hall and ſome ſmall apartments are reſerved by the Doctor, who frequently reſides here to ſee that his noble plan is properly executed.—Among the variety of diſtreſſed who find relief from the judicious diſpoſition of this charity, are the mariners navigating this dangerous coaſt, for whoſe benefit a conſtant watch is kept on the top of the tower; from whence ſignals are given to the fiſhermen of Holy Iſland when any ſhip is diſcovered in diſtreſs, theſe fiſhermen by their ſituation being able to put off their boats when none from the land can get over the breakers. The ſignals are ſo regulated as to point out the particular place where the diſtreſſed veſſel lies. Beſides which, in every great ſtorm, two men on horſeback patrole the adjacent coaſt from ſun-ſet to ſun-riſe, who, in caſe of any ſhipwreck, are to give immediate notice at the caſtle. Premiums are likewiſe paid for the earlieſt information of any ſuch misfortune. By theſe means the lives of many ſeamen have been, and will be, preſerved, who would otherwiſe have periſhed for want of timely aſſiſtance. Nor does this benevolent arrangement ſtop here. The ſhipwrecked mariner find an hoſpitable reception in this caſtle; and is here maintained for a week or longer, as circumſtances may require. Here likewiſe are ſtore-houſes for depoſiting the goods which may be ſaved; inſtruments and tackle for weighing and raiſing the ſunken and ſtranded veſſels; and, to complete the whole, at the expence of this fund, the laſt offices are decently performed to the bodies of ſuch drowned ſailors as are caſt on ſhore.

removed to Jena, and afterwards to Leipſic, where he ſtudied the law. In 1642, he was made advocate at Magdeburg, and there applied himſelf to the ſtudy of experimental philoſophy. Some time after he travelled into Italy; and applied himſelf to the ſtudy of medicine, anatomy, and botany, at Padua. He afterwards ſtudied at Bologna; and at Rome learned optics, painting, ſculpture, and muſic. He at length travelled into France, England, and Holland; obtained the degree of doctor of phyſic at Wittemberg; travelled into Germany and the North; viſited the mines of Saxony, Bohemia, Hungary, and Sweden; and returned to France, where he acquired the eſteem of the learned. He was on the point of returning into Germany, when M. Colbert being informed of his merit, made him ſuch advantageous offers, as induced him to fix his reſidence at Paris. M. Homberg, who was already well known for his phoſphorus, for a pneumatic machine of his own invention more perfect than that of Guericke, for his microſcopes, for his diſcoveries in chemiſtry, and for the great number and variety of his curious obſervations, was received into the academy of ſciences in 1691, and had the laboratory of that academy, of which he was one of its principal ornaments. The duke of Orleans, afterwards regent of the kingdom, at length made him his chemiſt, ſettled upon him a penſion, gave him the moſt ſuperb laboratory that was ever in the poſſeſſion of a chemiſt, and in 1704 made him his firſt phyſician. He had abjured the Proteſtant religion in 1682, and died in 1715. There are a great number of learned and curious pieces of his writing, in the memoirs of the academy of ſciences, and in ſeveral journals. He had begun to give the elements of chemiſtry in the memoirs of the academy, and the reſt were found among his papers fit for printing.

HOMBERG, a town of Germany, in the circle of the Upper Rhine, and landgraviate of Heſſe, ſeated ten miles north of Francfort, and gives title to one of the branches of the houſe of Heſſe, who is its ſovereign. E. Long. 8. 24. N. Lat. 50. 20.

HOMBERG, a town of Germany, in the palatinate of the Rhine, and duchy of Deuxponts. E. Long. 7. 6. N. Lat. 49. 20.

HOME (Henry), Lord Kames, an eminent Scottiſh lawyer, and author of many celebrated works on various ſubjects, was deſcended of a very honourable and ancient family, and was born in the year 1696. Lord Kames's grandfather, Henry Home, was a younger ſon of Sir John Home of Renton, who held the high office of lord juſtice-clerk, or chief criminal judge of Scotland, in the year 1663. He received the eſtate of Kames from his uncle George, brother to the then lord juſtice-clerk. The family of Renton is deſcended from that of the earls of Home, the repreſentatives of the ancient princes of Northumberland, as appears from the records of the Lion Office.

The county of Berwick in Scotland has the honour of having given birth to this great and uſeful member of ſociety. In early youth he was lively, and eager in the acquiſition of knowledge. He never attended a public ſchool; but was inſtructed in the ancient and modern languages, as well as in ſeveral branches of mathematics, and the arts neceſſarily connected with that ſcience, by Mr Wingate, a man of conſiderable parts and learning, who ſpent many years as preceptor or private tutor to Mr Home.

After ſtudying, with acuteneſs and diligence, at the univerſity of Edinburgh, the civil law, and the municipal law of his own country, Mr Home early perceived that a knowledge of theſe alone is not ſufficient to make an accompliſhed lawyer. An acquaintance with the forms and practical buſineſs of courts, and eſpecially of the ſupreme court, as a member of which he was to ſeek for fame and emolument, he conſidered as eſſentially neceſſary to qualify him to be a complete barriſter. He accordingly attended for ſome time the chamber of a writer to the ſignet, where he had an opportunity of learning the ſtyles of legal deeds, and the modes of conducting different ſpecies of buſineſs. This wiſe ſtep, independently of his great genius and unwearied application, procured him, after his admiſſion to the bar, peculiar reſpect from the court, and proportional employment in his profeſſion of an advocate. Whoever peruſes the law-papers compoſed by Mr Home when a young man, will perceive an uncommon elegance of ſtyle, beſides great ingenuity of reaſoning, and a thorough knowledge of the law and conſtitution of his country. Theſe qualifications, together with the ſtrength and vivacity of his natural abilities, ſoon raiſed him to be an ornament to the Scottiſh bar; and, on the 2d day of February 1752, he was advanced to the bench as one of the judges of the court of ſeſſion, under the title of *Lord Kames*.

Before this period, however, notwithſtanding the unavoidable labours of his profeſſion, Mr Home had favoured the world with ſeveral uſeful and ingenious works. In the year 1728, he publiſhed *Remarkable Deciſions of the Court of Seſſion from* 1716 *to* 1728, in one vol. folio.—In 1732 appeared *Eſſays upon ſeveral ſubjects in law, viz. Jus tertii; Beneficium cedendarum actionum; Vinco Vincentem; and Preſcription*; in one volume 8vo. This firſt produce of his original genius, and of his extenſive views, excited not only the attention, but the admiration of the judges, and of all the other members of the college of juſtice. This work was ſucceeded, in the year 1741, by *Deciſions of the Court of Seſſion from its firſt inſtitution to the year* 1740, *abridged and digeſted into proper heads, in form of a Dictionary*, in two volumes folio: A very laborious work, and of the greateſt utility to every practical lawyer. In 1747 appeared *Eſſays upon ſeveral ſubjects concerning Britiſh Antiquities*, viz. 1. Introduction of the feudal law into Scotland. 2. Conſtitution of parliament. 3. Honour, Dignity. 4. Succeſſion, or Deſcent; with an appendix upon hereditary and indefeaſible right, compoſed anno 1745, and publiſhed 1747, in one volume 8vo. In a preface to this work, Lord Kames informs us, that in the years 1745 and 1746, when the nation was in great ſuſpence and diſtraction, he retired to the country; and in order to baniſh as much as poſſible the uneaſineſs of his mind, he contrived the plan, and executed this ingenious performance.

Though not in the order of time, we ſhall continue the liſt of all our author's writings on law, before we proceed to his productions on other ſubjects. In 1757, he publiſhed *The Statute law of Scotland abridged, with hiſtorical notes*, in one volume 8vo; a moſt uſeful and laborious work. In the year 1759, he preſented to the public a new work under the title of *Hiſto-*

rical Law Tracts in one vol. 8vo. It contains fourteen intereſting tracts, viz. Hiſtory of the Criminal Law:—Hiſtory of Promiſes and Covenants:—Hiſtory of Property:—Hiſtory of Securities upon and for Payment of Debt:—Hiſtory of the Privilege which an Heir-apparent in a feudal holding has to continue the Poſſeſſion of his Anceſtor;—Hiſtory of Regalities, and of the Privilege of repledging:—Hiſtory of Courts:—Hiſtory of Brieves:—Hiſtory of proceſs in abſence:—Hiſtory of Execution againſt Moveables and Land for Payment of Debt:—Hiſtory of Perſonal Execution for Payment of Debt:—Hiſtory of Execution for obtaining payment after the Death of the Debtor;—Hiſtory of the limited and univerſal Repreſentation of Heirs:—Old and New Extent. In 1760, he publiſhed in one volume folio, *The Principles of Equity*; a work which ſhows both the fertility of the author's genius and his indefatigable application. In 1766, he gave to the public another volume in folio of *Remarkable Deciſions of the Court of Seſſion*, from 1730 to 1752. In 1777, appeared his *Elucidations reſpecting the Common and Statute Law of Scotland*, in one volume, 8vo. This book contains many curious and intereſting remarks upon ſome intricate and dubious points which occur in the law of Scotland. In 1780, he publiſhed a volume in folio of *Select Deciſions of the Court of Seſſion from* 1752 *to* 1768.

From this ſketch of Lord Kames's compoſitions and collections with a view to improve and elucidate the laws of Scotland, the reader may form ſome idea of his great induſtry, and of his anxious deſire to promote the honour and welfare of his country. It remains to be remarked, that in the ſupreme court there, the law writings of Lord Kames are held in equal eſtimation, and quoted with equal reſpect, as thoſe of Coke or Blackſtone in the courts of England.

Lord Kames's mind was very much inclined to metaphyſicial diſquiſitions. When a young man, in order to improve himſelf in his favourite ſtudy, he correſponded with the famous Berkeley biſhop of Cloyne, Dr Butler biſhop of Durham, Dr Samuel Clark, and many other ingenious and learned men both in Britain and Ireland. The letters of correſpondence, we are happy to learn, have been carefully preſerved by his ſon and heir George Home-Drummond, Eſq; of Blair-Drummond.

The year 1751 gave birth to the firſt fruits of his Lordſhips metaphyſical ſtudies, under the title of *Eſſays on the Principles of Morality and natural Religion*, in two parts. Though a ſmall volume, it was replete with ingenuity and acute reaſoning, excited general attention, and gave riſe to much controverſy. It contained, in more explicit terms than perhaps any other work of a religious theiſt then known in Scotland, the doctrine which has of late made ſo much noiſe under the appellation of *philoſophical neceſſity*. The ſame thing had indeed been taught by Hobbes, by Collins, and by the celebrated David Hume, Eſq. but as thoſe authors either were profeſſed infidels, or were ſuppoſed to be ſuch, it excited, as coming from them no wonder, and provoked for a time very little indignation. But when a writer, who exhibited no ſymptoms of extravagant ſcepticiſm, who inſinuated nothing againſt the truth of revelation in general, and who inculcated with earneſtneſs the great duties of morality and natural religion, advanced at the ſame time ſo uncommon a doctrine as that of *neceſſity*; a number of pens were immediately drawn againſt him, and for a while the work and its author were extremely obnoxious to a great part of the Scottiſh nation. On the other hand, there were ſome, and thoſe not totally illiterate, who, confounding *neceſſity* with *predeſtination*, complimented Mr Home on his maſterly defence of the eſtabliſhed faith: and though between theſe two ſchemes there is no ſort of reſemblance, except that the future happineſs or miſery of all men is, according to both, certainly fore-known and appointed by God; yet we remember, that a profeſſor in a diſſenting academy ſo far miſtook the one for the other, that he recommended to his pupils the *Eſſays on morality and natural religion*, as containing a complete vindication of the doctrine of Calvin. For this miſtake he was diſmiſſed from his office, and excluded from the communion of the ſect to which he belonged. Lord Kames, like many other great and good men, continued a Neceſſarian to the day of his death; but in a ſubſequent edition of the eſſays, he exhibited a remarkable proof of his candour and liberality of ſentiment, by altering the expreſſions, which contrary to his intention, had given ſuch general offence.

In 1761, he publiſhed an *Introduction to the Art of Thinking*, in one volume 12mo. This ſmall but valuable book was originally intended for the inſtruction of his own family. The plan of it is both curious, amuſing, and highly calculated to catch the attention and to improve the minds of youth. It conſiſts of maxims collected from Rochefoucault, and many other authors. To illuſtrate theſe maxims, and to rivet their ſpirit and meaning in the minds of young perſons, his lordſhip has added to moſt of them beautiful ſtories, fables, and hiſtorical anecdotes.

In the department of belles lettres, his *Elements of Criticiſm* appeared in 1762, in three volumes 8vo. This valuable work is the firſt and a moſt ſucceſsful attempt to ſhow, that the art of criticiſm is founded on the principles of human nature. Such a plan, it might be thought, ſhould have produced a dry and phlegmatic performance. Lord Kames, on the contrary from the ſprightlineſs of his manner of treating every ſubject he handled, has rendered the Elements of Criticiſm not only highly inſtructive, but one of the moſt entertaining books in our language. Before this work was publiſhed, Rollin's Belles Lettres, a dull performance, from which a ſtudent could derive little advantage, was univerſally recommended as a ſtandard; but, after the Elements of Criticiſm were preſented to the public, Rollin inſtantly vaniſhed, and gave place to greater genius and greater utility. With regard to real inſtruction and genuine taſte in compoſition of every kind, a ſtudent, a gentleman, or a ſcholar, can in no language find ſuch a fertile field of information. Lord Kames, accordingly, had the happineſs of ſeeing the good effects of his labours, and of enjoying for twenty years a reputation which he ſo juſtly merited.

A ſtill farther proof of the genius and various purſuits of this active mind was given in the year 1772, when his Lordſhip publiſhed a work in one volume 8vo, under the title of *The Gentleman Farmer, being an attempt to improve Agriculture by ſubjecting it to the teſt of rational principles*. Our limits do not permit us to give details: but, with regard to this book, we muſt inform the public, that all the intelligent farmers in Scotland uniformely declare, that, after peruſing Young, Dickſon, and a hundred other writers on agriculture, Lord Kames's *Gentleman Farmer* contains the beſt practical and rational information on the various articles of huſbandry which can any where be obtained. As a practical farmer, Lord Kames has given many obvious proofs of his ſkill. After he ſucceeded, in the right of his lady, to the ample eſtate of Blair-Drummond in the county of Perth, he formed a plan for turning a large moſs, conſiſting of at leaſt 1500 acres, into arable land. His Lordſhip had the pleaſure, before he died, to ſee the plan ſucceſsfully, though only partially, executed. The ſame plan is now carrying on in a much more rapid manner by his ſon George Drummond, Eſq. But as this is not a proper place for details of this nature, we muſt refer the reader to the article Moss; where a particular account of this extraordinary, but extenſively uſeful, operation ſhall be given.

In the year 1773, Lord Kames favoured the world with *Sketches of the Hiſtory of Man*, in 2 vols 4to. This work conſiſts of a great variety of facts and obſervations concerning the nature of man; the produce of much and profitable reading. In the courſe of his ſtudies and reaſonings, he had amaſſed a vaſt collection of materials. Theſe, when conſiderably advanced in years, he digeſted under proper heads, and ſubmitted them to the conſideration of the public. He intended that this book ſhould be equally intelligible to women as to men; and, to acompliſh this end, when he had occaſion to quote ancient or foreign books, he uniformly tranſlated the paſſages. The *Sketches* contain much uſeful information; and, like all his Lordſhip's other performances, are lively and entertaining.

We now come to Lord Kames's laſt work, to which he modeſtly gives the title of *Looſe Hints upon Education, chiefly concerning the Culture of the Heart.* It was publiſhed in the year 1781, in one vol. 8vo, when the venerable and aſtoniſhing author was in the 85th year of his age. Though his Lordſhip choſe to call them *Looſe Hints*, the intelligent reader will perceive in this compoſition an uncommon activity of mind at an age ſo far advanced beyond the uſual period of human life, and an earneſt deſire to form the minds of youth to honour, to virtue, to induſtry, and to a veneration of the Deity.

Beſide the books we have enumerated, Lord Kames publiſhed many temporary and fugitive pieces in different periodical works. In the *Eſſays Phyſical and Literary*, publiſhed by a ſociety of gentlemen in Edinburgh, we find compoſitions of his Lordſhip *On the Laws of Motion*, *On the Advantages of Shallow Ploughing*, and on *Evaporation*; all of which exhibit evident marks of genius and originality of thinking.

How a man employed through life in public buſineſs; and in buſineſs of the firſt importance, could find leiſure for ſo many different purſuits, and excel in them (A), it is not eaſy for a meaner mind to form even a conception. Much, no doubt, is to be attributed to the ſuperiority of his genius; but much muſt likewiſe have been the reſult of a proper diſtribution of his time. He roſe early; when in the vigour of life at four o'clock, in old age at ſix; and ſtudied all morning. When the court was ſitting, the duties of his office employed him from eight or nine till twelve or one; after which, if the weather permitted, he walked for two hours with ſome literary friends, and then went home to dinner. Whilſt he was on the bench, and we believe when he was at the bar, he neither gave nor accepted invitations to dinner during the *term* or *ſeſſion*; and if any friend came uninvited to dine with him, his Lordſhip diſplayed his uſeful chearfulneſs and hoſpitality, but always retired with his clerk as ſoon as he had drank a very few glaſſes of wine, leaving his company to be entertained by his lady. The afternoon was ſpent as the morning had been, in ſtudy. In the evening he went to the theatre or concert, from which he returned to the ſociety of ſome men of learning, with whom he ſat late, and diſplayed ſuch talents for converſation as are not often found. It is obſerved by a late celebrated author, that “to read, write, and converſe in due proportions, is the buſineſs of a man of letters; and that he who hopes to look back hereafter with ſatisfaction upon paſt years, muſt learn to know the value of ſingle minutes, and endeavour to let no particle of time fall uſeleſs to the ground.” It was by practiſing thoſe leſſons that Lord Kames roſe to literary eminence, in oppoſition to all the obſtacles which the tumult of public buſineſs could place in his way.

To give a proper delineation of the public and private character of Lord Kames, would far exceed our limits. The writer of this article, however, who had the honour of an intimate acquaintance with this great and good man for more than twenty years, muſt be indulged in adding a few facts which fell under his own obſervation.

Lord Kames was remarkable for public ſpirit, to which he conjoined activity and great exertion. He for a long tract of time had the principal management of all the ſocieties and boards for promoting the trade, fiſheries, and manufactures, in Scotland. As conducive to theſe ends, he was a ſtrenuous advocate for making and repairing turnpike roads through every part of the country. He had likewiſe a chief lead in the diſtribution and application of the funds ariſing from the eſtates in Scotland which had unfortunately been annexed to the crown. He was no leſs zealous in ſupporting, both with his writings and perſonal influence, literary aſſociations. He was in ſome meaſure the parent of what was called the *Phyſical and Literary Society*. This ſociety was afterwards incorpo-

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(A) Upon reflecting on the ſtudiouſneſs of Lord Kames's diſpoſition, and his numerous literary productions, the reader will naturally recal to his mind a ſtriking ſimilarity between his Lordſhip and the laborious Pliny the Elder. In a letter from Pliny the Younger to Macer, the following paſſages occurs, which is equally applicable to both: *Nonne videtur tibi, recordanti quantum legerit, quantum ſcripſerit, nec in officiis ullis, nec in amicitia principum fuiſſe?* which is thus tranſlated by Melmoth: “When you reflect on the books he has read and the volumes he has written, are you not enclined to ſuſpect, that he never was engaged in the affairs of the public, or the ſervice of his prince?”

rated into the *Royal Society of Edinburgh*, which received a charter from the crown, and which is daily producing marks of genius, as well as works of real utility.

As a private and domeſtic gentleman, Lord Kames was admired by both ſexes. The vivacity of his wit and of his animal ſpirits, even when advanced in years, rendered his company not only agreeable, but greatly ſolicited by the literati, and courted by ladies of the higheſt rank and accompliſhments. He told very few ſtories; and rarely, if ever, repeated the ſame ſtory to the ſame perſon. From the neceſſity of retailing anecdotes, the miſerable refuge of thoſe who without genius, attempt to ſhine in converſation, the abundance of his own mind ſet him free; for his wit or his learning always ſuggeſted what the occaſion required. He could with equal eaſe and readineſs combat the opinions of a metaphyſician, unravel the intricacies of law, talk with a farmer on improvements in agriculture, or eſtimate with a lady the merits of the dreſs in faſhion. Inſtead of being jealous of rivals, the characteriſtic of little minds, Lord Kames foſtered and encouraged every ſymptom of merit that he could diſcover in the ſcholar, or in the loweſt mechanic. Before he ſucceeded to the eſtate of Blair-Drummond, his fortune was ſmall. Notwithſtanding this circumſtance, he, in conjuction with Mrs Drummond, his reſpectable and accompliſhed ſpouſe, did much more ſervice to the indigent than moſt families of greater opulence. If the preſent neceſſity was preſſing, they gave money. They did more: When they diſcovered that male or female petitioners were capable of performing any art or labour, both parties exerted themſelves in procuring that ſpecies of work which the poor people could perform. In caſes of this kind, which were very frequent, the lady took charge of the women and his Lordſhip of the men. From what has been ſaid concerning the various and numerous productions of his genius, it is obvious that there could be few idle moments in his long protracted life. His mind was inceſſantly employed; either teeming with new ideas, or purſuing active and laborious occupations. At the ſame time, with all this intellectual ardour, one great feature in the character of Lord Kames, beſides his literary talents and his public ſpirit, was a remarkable innocency of mind. He not only never indulged in detraction, but when any ſpecies of ſcandal was exhibited in his company, he either remained ſilent, or endeavoured to give a different turn to the converſation. As natural conſequences of this amiable diſpoſition, he never meddled with politics, even when parties ran to indecent lengths in his country; and, what is ſtill more remarkable, he never wrote a ſentence, notwithſtanding his numerous publications, without a direct and a manifeſt intention to benefit his fellow-creatures. In his temper he was naturally warm, though kind and affectionate. In the friendſhips he formed, he was ardent, zealous, and ſincere. So far from being inclined to irreligion, as ſome ignorant bigots inſinuated, few men poſſeſſed a more devout habit of thought. A conſtant ſenſe of Deity, and a veneration for Providence, dwelt upon his mind. From this ſource aroſe that propenſity which appears in all his writings, of inveſtigating final cauſes, and tracing the wiſdom of the Supreme Author of nature. But here we muſt ſtop. Lord Kames, to the great regret of the public, died on the 27th day of December 1782. As he had no marked diſeaſe but the debility neceſſarily reſulting from extreme old age, a few days before his death he went to the Court of Seſſion, addreſſed all the judges ſeparately, told them he was ſpeedily to depart, and took a ſolemn and an affectionate farewell.

HOMER, the prince of the Greek poets, flouriſhed, according to Dr Blair, about 900 B. C. according to Dr Prieſtley 850, according to the Arundelian marbles 300, after the taking of Troy; and agreeable to them all, above 400 years before Plato and Ariſtotle. Seven cities diſputed the glory of having given him birth, viz. Smyrna, Rhodes, Colophon, Salamis, Chios, Argos, and Athens; which has been expreſſed by the following diſtich:

Smyrna, Rhodes, Colophon, Salamis, Chios, Argos, Athenæ;
Orbis de patria certat, Homere, tua.

We have nothing that is very certain in relation to the particulars of his life. The moſt regular account is that which goes under the name of Herodotus, and is uſually printed with his hiſtory: and though it is generally ſuppoſed to be a ſpurious piece, yet as it is ancient, was made uſe of by Strabo, and exhibits that idea which the later Greeks, and the Romans in the age of Auguſtus, entertained of Homer, we muſt content ourſelves with giving an abſtract of it.

A man of Magneſia, whoſe name was *Menalippus*, went to ſettle at Cumæ, where he married the daughter of a citizen called *Homyres*, and had by her a daughter called *Critheis*. The father and mother dying, the young woman was left under the tuition of Cleonax her father's friend, and ſuffering herſelf to be deluded was got with child. The guardian, though his care had not prevented the misfortune, was however willing to conceal it; and therefore ſent Critheis to Smyrna, which was then building, 18 years after the founding of Cumæ, and about 168 after the taking of Troy. Critheis being near her time, went one day to a feſtival, which the town of Smyrna was celebrating on the banks of the river Meles; where her pains coming upon her, ſhe was delivered of Homer, whom ſhe called *Meleſigenes*, becauſe he was born on the banks of that river. Having nothing to maintain her, ſhe was forced to ſpin: and a man of Smyrna called *Phemius*, who taught literature and muſic, having often ſeen Critheis, who lodged near him, and being pleaſed with her houſewifery, took her into his houſe to ſpin the wool he received from his ſcholars for their ſchooling. Here ſhe behaved herſelf ſo modeſtly and diſcreetly, that Phemius married her; and adopted her ſon, in whom he diſcovered a wonderful genius, and the beſt natural diſpoſition in the world. After the death of Phemius and Critheis, Homer ſucceeded to his father-in-law's fortune and ſchool; and was admired, not only by the inhabitants of Smyrna, but by ſtrangers, who reſorted from all parts to that place of trade. A ſhipmaſter called *Mentes*, who was a man of learning and a lover of poetry, was ſo taken with Homer, that he perſuaded him to leave his ſchool, and to travel with him. Homer, who had then begun his poem of the Iliad, and thought it of great conſequence to ſee the places he ſhould have occaſion to treat of, embraced the opportunity. He embarked with Mentes, and during their ſeveral voyages never failed carefully to note down all that he thought worth obſerving. He travelled into Egypt; from whence he brought into Greece the names of their gods, the chief ceremonies of their worſhip, and a more improved knowledge in the arts than what prevailed in his own country. He viſited Africa and Spain; in his return from whence he touched at Ithaca, where he was much troubled with a rheum falling upon his eyes. Mentes being in haſte to take a turn to Leucadia his native country, left Homer well recommended to Mentor, one of the chief men of the iſland of Ithaca, who took all poſſible care of him. There Homer was informed of many things relating to Ulyſſes, which he afterwards made uſe of in compoſing his Odyſſey. Mentes returning to Ithaca, found Homer cured. They embarked together; and after much time ſpent in viſiting the coaſts of Peloponneſus and the iſlands, they arrived at Colophon, where Homer was again troubled with the defluxion upon his eyes, which proved ſo violent, that he is ſaid to have loſt his ſight. This miſfortune made him reſolve to return to Smyrna, where he finiſhed his Iliad. Some time after, the ill poſture of his affairs obliged him to go to Cumæ, where he hoped to have found ſome relief. Here his poems were highly applauded: but when he propoſed to immortalize their town, if they would allow him a ſalary, he was anſwered, that "there would be no end of maintaining all the Ομηροι or "blind men;" and hence he got the name of *Homer*. He afterwards wandered through ſeveral places, and ſtopped at Chios, where he married, and compoſed his Odyſſey. Some time after, having added many verſes to his poems in praiſe of the cities of Greece, eſpecially of Athens and Argos, he went to Samos, where he ſpent the winter, ſinging at the houſes of the great men, with a train of boys after him. From Samos he went to Io, one of the Sporades, with a deſign to continue his voyage to Athens; but landing by the way at Chios, he fell ſick, died, and was buried on the ſea-ſhore.

The only inconteſtable works which Homer has left behind him are the ILIAD and ODYSSEY. The Batrachomyomachia, or battle of the frogs and mice, has been diſputed. The hymns have been diſputed alſo, and attributed by the ſcholiaſts to Cynæthus the rhapſodiſt: but neither Thucydides, Lucian, nor Pauſanias, have ſcrupled to cite them as genuine. Many other pieces are aſcribed to him: epigrams, the Eartiges, the Cecropes, the deſtruction of Oechalia, of which only the names are remaining.

Nothing was ever comparable to the clearneſs and majeſty of Homer's ſtyle; to the ſublimity of his thoughts; to the ſtrength and ſweetneſs of his verſes. All his images are ſtriking; his deſcriptions juſt and exact; the paſſions ſo well expreſſed, and nature ſo juſt and finely painted, that he gives to every thing motion, life, and action. But he more particularly excels in invention, and in the different characters of his heroes, which are ſo varied, that they affect us in an inexpreſſible manner. In a word, the more he is read by a perſon of good taſte, the more he is admired. Nor are his works to be eſteemed merely as entertaining poems, or as the monuments of a ſublime and varied genius. He was in general ſo accurate with reſpect to coſtume, that he ſeldom mentioned perſons or things that we may not conclude to have been known during the times of which he writes; and it was Mr Pope's opinion, that his account of people, princes, and countries, was purely hiſtorical, founded on the real tranſactions of thoſe times, and by far the moſt valuable piece of hiſtory and geography left us concerning the ſtate of Greece in that early period. His geographical diviſions of that country were thought ſo exact, that we are told of many controverſies concerning the boundaries of Grecian cities which have been decided upon the authority of his poems.

Alcibiades gave a rhetorician a box on the ear for not having Homer's writings in his ſchool. Alexander was raviſhed with them, and commonly placed them under his pillow with his ſword: he incloſed the Iliad in the precious caſket that belonged to Darius; "in order (ſaid he to his courtiers) that the moſt perfect production of the human mind might be incloſed in the moſt valuable caſket in the world." And one day ſeeing the tomb of Achilles in Sigæa, "Fortunate hero! (cried he), thou haſt had a Homer to ſing thy victories!" Lycurgus, Solon, and the kings and princes of Greece, ſet ſuch a value on Homer's works, that they took the utmoſt pains in procuring correct editions of them, the moſt eſteemed of which is that of Ariſtarchus. Didymus was the firſt who wrote notes on Homer; and Euſtathius, archbiſhop of Theſſalonica, in the 12th century, is the moſt celebrated of his commentators. Mr Pope has given an elegant tranſlation of the Iliad, adorned with the harmony of poetic numbers; and Mad. Dacier has tranſlated both the Iliad and Odyſſey in proſe.

Thoſe who deſire to know the ſeveral editions of Homer, and the writers who have employed themſelves on the works of that great poet, may conſult Fabricius, in the firſt volume of his *Bibliotheca Græca*.

A very ſingular diſcovery, however, which was made a few years ago in Ruſſia, deſerves to be here mentioned, together with the circumſtances that attended it. Chriſtian Frederic Matthæi, who had been educated by the learned Erneſti, and did credit to the inſtructions of that celebrated maſter by the great erudition that he diſplayed, being invited to ſettle at Moſcow, and to aſſiſt in a plan of literature for which his abilities and acquiſitions eminently qualified him, on his arrival at that city was informed, equally to his aſtoniſhment and ſatisfaction, that a very copious treaſure of Greek manuſcripts was depoſited in the library of the Holy ſynod, which no perſon in that country had either the abilities to make uſe of, or the curioſity to examine. Struck with the relation of a circumſtance ſo unexpected, and at the ſame time ſo peculiarly agreeable to his claſſical taſte, he immediately ſeized the opportunity that was fortunately offered him, to explore this repoſitory of hidden treaſure. After having examined ſeveral curious books, he diſcovered a manuſcript copy of the works of Homer, written about the concluſion of the 14th century, but evidently a tranſcript from a very ancient and moſt valuable copy, which, beſides the Iliad and the Odyſſey, contains alſo 16 of the hymns, which have been long publiſhed under the name of *Homer*. Nor was this all. Twelve lines of a loſt hymn to Bacchus, and the hymn to Ceres, which was alſo loſt, were preſerved in this curious and long unnoticed manuſcript. The hymn to Ceres appears to be entire, excepting a few lines towards the cloſe: and it is ſurely remarkable, that a Greek poem, attributed to Homer, which had been loſt for ages, ſhould be at length diſcovered in Muſcovy, the rudeſt and moſt unclaſſical country in Europe. M. Matthæi, exulting in an acquiſition ſo unexpected, and at the ſame time ſo valuable, communicated it, with ſingular diſintereſtedneſs, to his learned friend M. Ruhnkenius, with whoſe talents and extraordinary erudition he was well acquainted, that this gentleman might preſent it to the world without thoſe delays which would probably have retarded the publication of it at Muſcovy. He was rather induced to employ M. Ruhnkenius in the publication of this curious and beautiful remnant of antiquity, becauſe he knew that this gentleman had been particularly engaged in the ſtudy of the hymns of Homer, in order to give the public a complete edition of them. The hymn to Ceres, and the fragment of the hymn to Bacchus, were printed in 1780 at Leyden, under the care of M. Ruhnkenius; who has added ſome very valuable notes and obſervations on the hymn to Ceres, which tend to illuſtrate its beauties, and to throw a light on ſome of its obſcurities. The learned editor obſerves, that nothing was more diſtant from his expectations than the diſcovery of the hymn to Ceres. He knew indeed that a poem bearing that title, and aſcribed to Homer, exiſted in the ſecond century; but as it had long been conſidered as irretrievably loſt, he had formed no hopes of ever ſeeing it reſcued from the obſcurity to which it had been conſigned. He acknowledges, that he has many doubts with reſpect to the high and illuſtrious origin aſcribed to this hymn; but as no poſitive external evidence can be produced to determine the point, he chooſes to reſt his argument on what appears to him the more certain ground of internal proof; and obſerves, that though the poem be exquiſitely beautiful, yet that it is evidently deficient in ſome of Homer's more ſtriking and predominant characteriſtics. It wants his energy and ſpirit; that vigour, that inſpiration, which animate and give an irreſiſtible power, as well as an enchanting beauty, to the poems of that ſublime and inimitable bard. This opinion, as we have already ſeen, hath been given by other critics of all the hymns of Homer. But though M. Ruhnkenius is not inclined to attribute the hymn of Ceres to Homer, he yet acknowledges, that the ſtructure of its language is founded on the model of that great poet, and he heſitates not to give it the honour of very high antiquity. He is of opinion, that it was written immediately after Homer, or at leaſt in the age of Heſiod: and he congratulates the age on the diſcovery of ſo curious a poem, reſcued by mere accident from the darkeſt retreats of oblivion, and perhaps but at a ſlight diſtance from inevitable perdition. He deems it to be an acquiſition, not only calculated to gratify the curioſity of the connoiſſeurs in claſſic antiquity, or to entertain thoſe lovers of Greek poetry whoſe ſtudies are made ſubſervient to a refined and elegant ſpecies of amuſement, but he alſo eſteems it to be of particular uſe to the critic, as it tends to illuſtrate ſome obſcure paſſages both in the Greek and Latin poets.

HOMER, Omer, or Chomer, a Jewiſh meaſure, containing the tenth part of the epha. See Corus and Measure.

HOMESOKEN. See Hamesecken.

HOMICIDE, ſignifies in general, the taking away of any perſon's life. It is of three kinds; *juſtifiable*, *excuſable*, and *felonious*. The firſt has no ſhare of guilt at all; the ſecond very little; but the third is the higheſt crime againſt the law of nature that man is capable of committing.

I. Juſtifiable homicide is of divers kinds.

1. Such as is owing to ſome unavoidable *neceſſity*, without any will, intention, or deſire, and without any inadvertence or negligence, in the party killing, and therefore without any ſhadow of blame; as, for inſtance, by virtue of ſuch an office as obliges one, in the execution of public juſtice, to put a malefactor to death, who hath forfeited his life by the laws and verdict of his country. This is an act of neceſſity, and even of civil duty; and therefore not only juſtifiable but commendable, where the law requires it. But the law muſt *require* it, otherwiſe it is not juſtifiable: therefore wantonly to kill the greateſt of malefactors, a felon, or a traitor, attainted or outlawed, deliberately, uncompelled, and extrajudicially, is murder. And farther, if judgment of death be given by a judge not authorized by lawful commiſſion, and execution is done accordingly, the judge is guilty of murder. Alſo ſuch judgment, when legal, muſt be executed by the proper officer, or his appointed deputy; for no one elſe is *required* by law to do it, which requiſition it is that juſtifies the homicide. If another perſon doth it of his own head, it is held to be murder; even though it be the judge himſelf. It muſt further be executed, *ſervato juris ordine*; it muſt purſue the ſentence of the court. If an officer beheads one who is adjudged to be hanged, or *vice verſa*, it is murder: for he is merely miniſterial, and therefore only juſtified when he acts under the authority and compulſion of the law. But, if a ſheriff changes one kind of puniſhment for another, he then acts by his own authority, which extends not to the commiſſion of homicide: and beſides, this licence might occaſion a very groſs abuſe of his power. The king indeed may remit part of a ſentence, as in the caſe of treaſon, all but the beheading: but this is no change, no introduction of a new puniſhment; and in the caſe of felony, where the judgment is *to be hanged*, the king (it hath been ſaid) cannot legally order a peer to be beheaded.

Again: In ſome caſes homicide is juſtifiable, rather by the *permiſſion*, than by the abſolute *command*, of the law: either for the *advancement* of public *juſtice*, which without ſuch indemnification would never be carried on with proper vigour; or, in ſuch inſtances where it is committed for the *prevention* of ſome atrocious *crime*, which cannot otherwiſe be avoided.

2. Homicides committed for the *advancement* of public *juſtice*, are, 1. Where an officer, in the execution of his office, either in a civil or criminal caſe, kills a perſon that aſſaults and reſiſts him. 2. If an officer, or any private perſon, attempts to take a man charged with felony, and is reſiſted; and, in the endeavour to take him, kills him. 3. In caſe of a riot, or rebellious aſſembly, the officers endeavouring to diſperſe the mob are juſtifiable in killing them, both at common law, and by the riot act, 1 Geo. I. c. 5. 4. Where the priſoners in a gaol, or going to gaol, aſſault the gaoler or officer, and he in his defence kills any of them, it is juſtifiable, for the ſake of preventing an eſcape. 5. If treſpaſſers in foreſts, parks, chaſes, or warrens, will not ſurrender themſelves to the keepers, they may be ſlain; by virtue of the ſtatute

21 Edward I. ſt. 2. *de malefactoribus in parcis*, and 3 & 4 W. & M. c. 10. But, in all thoſe caſes, there muſt be an apparent neceſſity on the officer's ſide; *viz.* that the party could not be arreſted or apprehended, the riot could not be ſuppreſſed, the priſoners could not be kept in hold, the deer-ſtealers could not but eſcape, unleſs ſuch homicide were committed: otherwiſe without ſuch abſolute neceſſity, it is not juſtifiable. 6. If the champions in a trial by battle killed either of them the other, ſuch homicide was juſtifiable and was imputed to the juſt judgement of God, who was thereby preſumed to have decided in favour of the truth.

3. In the next place, ſuch homicide as is committed for the *prevention* of any forcible and atrocious *crime*, is juſtifiable by the law of nature; and alſo by the law of England, as it ſtood ſo early as the time of Bracton, and as it is ſince declared by ſtat. 24 H. VIII. c. 5. If any perſon attempts a robbery or murder of another, or attempts to break open a houſe *in the night-time*, (which extends alſo to an attempt to burn it) and alſo be killed in ſuch attempt, the ſlayer ſhall be acquitted and diſcharged. This reaches not to any crime unaccompanied with force, as picking of pockets; or to the breaking open of any houſe *in the day-time* without it carries with it an attempt of robbery alſo. So the Jewiſh law, which puniſhed no theft with death, makes homicide only juſtifiable in caſe of *nocturnal* houſe-breaking: "if a thief be found breaking up, and he be ſmitten that he die, no blood ſhall be ſhed for him: but if the ſun be riſen upon him, there ſhall be blood ſhed for him; for he ſhould have made full reſtitution." At Athens, if any theft was committed by night, it was lawful to kill the criminal, if taken in the fact: and by the Roman law of the twelve tables a thief might be ſlain by night with impunity; or even by day, if he armed himſelf with any dangerous weapon: which amounts very nearly to the ſame as is permitted by our own conſtitution.

The Roman law alſo juſtifies homicide: when committed in defence of the chaſtity either of one's ſelf or relations: and ſo alſo, according to Selden, ſtood the law in the Jewiſh republic. The Engliſh law likewiſe juſtifies a woman killing one who attempts to raviſh her: and ſo too the huſband or father ~~may juſtify~~ killing a man who attempts a rape upon his wife or daughter; but not if he takes them in adultery by conſent; for the one is forcible and fellonious, but not the other. And there is no doubt the forcibly attempting a crime, of a ſtill more deteſtable nature, may be equally reſiſted by the death of the unnatural aggreſſor. For the one uniform principle that runs through our own, and all other laws, ſeems to be this: That where a crime in itſelf capital, is endeavoured to be committed by force, it is lawful to repel the force by the death of the party attempting. But we muſt not carry this doctrine to the ſame viſionary length that Mr Locke does; who holds, "that all manner of force without right upon a man's perſon, puts him in a ſtate of war with the aggreſſor; and of conſequence, that being in ſuch a ſtate of war, he may lawfully kill him that puts him under this unnatural reſtraint." However juſt this concluſion may be in a ſtate of uncivilized nature, yet the law of England, like that of every other well-regulated community, is too tender of the public peace, too careful of the lives of the ſubjects, to adopt ſo contentious a ſyſtem; nor will it ſuffer with impunity any crime to be *prevented* by death, unleſs the ſame, if committed would alſo be *puniſhed* by death.

In theſe inſtances of *juſtifiable* homicide, it may be obſerved, that the ſlayer is in no kind of fault whatſoever, not even in the minuteſt degree: and is therefore to be totally acquitted and diſcharged, with commendation rather than blame. But that is not quite the caſe in *excuſable* homicide, the very name whereof imports ſome fault, ſome error, or omiſſion; ſo trivial, however, that the law excuſes it from the guilt of felony, though in ſtrictneſs it judges it deſerving of ſome little degree of puniſhment.

II. Excuſable homicide is of two ſorts; either *per infortunium*, by miſadventure; or *ſe defendendo*, upon a principle of ſelf preſervation. We will firſt ſee wherein theſe two ſpecies of homicide are diſtinct and then wherein they agree.

1. Homicide *per infortunium*, or miſadventure, is where a man, doing a lawful act, without any intention of hurt, unfortunately kills another: as where a man is at work with a hatchet, and the head thereof flies off and kills a ſtander-by; or, where a perſon, qualified to keep a gun, is ſhooting at a mark, and undeſignedly kills a man: for the act is lawful, and the effect is merely accidental. So where a parent is moderately correcting his child, a maſter his apprentice or ſcholar, or an officer puniſhing a criminal, and happens to occaſion his death, it is only miſadventure; for the act of correction was lawful: and if he exceeds the bounds of moderation, either in the manner, the inſtrument, or the quantity of puniſhment, and death enſues, it is manſlaughter at leaſt, and in ſome caſes (according to the circumſtances) murder; for the act of immoderate correction is unlawful. Thus by an edict of the emperor Conſtantine, when the rigour of the Roman law with regard to ſlaves began to relax and ſoften, a maſter was allowed to chaſtiſe his ſlave with rods and impriſonment and if death accidentally enſued he was guilty of no crime: but if he ſtruck him with a club or a ſtone, and thereby occaſioned his death, or if in any other yet groſſer manner, *immoderate ſuo jure utatur, tunc reus homicidii ſit.*

But to proceed. A tilt or tournament, the martial diverſion of our anceſtors, was however an unlawful act; and ſo are boxing and ſword playing, the ſucceeding amuſements of their poſterity: and therefore, if a knight in the former caſe, or a gladiator in the latter, be killed, ſuch killing is felony or manſlaughter. But if the king command or permit ſuch diverſion, it is ſaid to be only miſadventure; for then the act is lawful: In like manner as, by the laws both of Athens and Rome, he who killed another in the *pancratium*, or public games, authoriſed or permitted by the ſtate, was not held to be guilty of homicide. Likewiſe to whip another's horſe, whereby he runs over a child and kills him, is held to be accidental in the rider, for he has done nothing unlawful; but manſlaughter in the perſon who whipped him, for the act was a treſpaſs, and at beſt a piece of idleneſs, of inevitably dangerous conſequence. And in general, if death enſues in conſequence of an idle, dangerous, and unlawful ſport, as ſhooting or caſting ſtones in a town, or the barbarous diverſion of cock-throwing; in theſe and ſimilar caſes, the ſlayer is guilty of manſlaughter, and not miſadventure only; for theſe are unlawful acts.

2. Homicide in *ſelf-defence*, or *ſe defendendo*, upon a ſudden affray, is alſo excuſable rather than juſtifiable by the Engliſh law. This ſpecies of ſelf-defence muſt be diſtinguiſhed from that juſt now mentioned, as calculated to hinder the perpetration of a capital crime; which is not only a matter of excuſe, but of juſtification. But the ſelf-defence which we are now ſpeaking of, is that whereby a man may protect himſelf from an aſſault, or the like, in the courſe of a ſudden brawl or quarrel, by killing him who aſſaults him. And this is what the law expreſſes by the word *chance-medley*, or (as ſome rather chooſe to write it) *chaud-medley*; the former of which in its etymology ſignifies a *caſual* affray, the latter an affray in the *heat* of blood or paſſion: both of them of pretty much the ſame import; but the former is in common ſpeech too often erroneouſly applied to any manner of homicide by miſadventure; whereas it appears by the ſtatute 24 H. VIII. c. 5. and the ancient books, that it is properly applied to ſuch killing as happens in ſelf-defence upon a ſudden rencounter. The right of natural defence does not imply a right of attacking: for, inſtead of attacking one another for injuries paſt or impending, men need only have recourſe to the proper tribunals of juſtice. They cannot, therefore, legally exerciſe this right of preventive defence, but in ſudden and violent caſes; when certain and immediate ſuffering would be the conſequence of waiting for the aſſiſtance of the law. Wherefore to excuſe homicide by the plea of ſelf-defence, it muſt appear that the ſlayer had no other poſſible means of eſcaping from his aſſailant.

In ſome caſes this ſpecies of homicide (upon *chance-medley* in ſelf-defence) differs but little from manſlaughter, which alſo happens frequently upon *chance-medley* in the proper legal ſenſe of the word. But the true criterion between them ſeems to be this; when both parties are actually combating at the time when the mortal ſtroke is given, the ſlayer is then guilty of manſlaughter; but if the ſlayer hath not begun to fight, or (having begun) endeavours to decline any farther ſtruggle, and afterwards, being cloſely preſſed by his antagoniſt, kills him to avoid his own deſtruction, this is homicide excuſable by ſelf-defence. For which reaſon the law requires, that the perſon, who kills another in his own defence, ſhould have retreated as far as he conveniently or ſafely can, to avoid the violence of the aſſault, before he turns upon his aſſailant; and that not fictitiouſly, or in order to watch his opportunity, but from a real tenderneſs of ſhedding his brother's blood. And though it may be cowardice, in time of war between two independent nations, to flee from an enemy; yet between two fellow-ſubjects, the law countenances no ſuch point of honour; becauſe the conſtitutional courts are the *vindices injuriarum*, and will give to the party wronged all the ſatisfaction he deſerves. In this the civil law alſo agrees with ours, or perhaps goes rather farther; "*qui cum aliter tueri ſe non poſſunt, damni culpam dederint, innoxii ſunt.*" The party aſſaulted muſt therefore flee as far as he conveniently can, either by reaſon of ſome wall, ditch, or other impediment; or as far as the fierceneſs of the aſſault will permit him; for it may be ſo fierce as not to allow him to yield a ſtep, without manifeſt danger of his life, or enormous bodily harm; and then in his defence he may kill his aſſailant inſtantly. And this is the doctrine of univerſal juſtice, as well as of the municipal law.

And, as to the *manner* of the defence, ſo is alſo the *time* to be conſidered: for if the perſon aſſaulted does not fall upon the aggreſſor till the affray is over, or when he is running away, this is revenge and not defence. Neither under the colour of ſelf-defence, will the law permit a man to ſcreen himſelf from the guilt of deliberate murder: for if two perſons, A and B, agree to fight a duel, and A gives the firſt onſet, and B retreats as far as he poſſibly can, and then kills A, this is murder; becauſe of the previous malice and concerted deſign. But if A upon a ſudden quarrel aſſaults B firſt, and, upon B's returning the aſſault, A really and *bona fide* flies; and being driven to the wall, turns again upon B and kills him; this may be *ſe defendendo*, according to ſome of our writers; tho' others have thought this opinion too favourable: inaſmuch as the neceſſity, to which he is at laſt reduced, originally aroſe from his own fault. Under this excuſe of ſelf-defence, the principal civil and natural relations are comprehended: therefore, maſter and ſervant, parent and child, huſband and wife, killing an aſſailant in the neceſſary defence of each other reſpectively, are excuſed; the act of the relation aſſiſting being conſtrued the ſame as the act of the party himſelf.

There is one ſpecies of homicide *ſe defendendo*, where the party ſlain is equally innocent as he who occaſions his death: and yet this homicide is alſo excuſable from the great univerſal principle of ſelf preſervation, which prompts every man to ſave his own life preferable to that of another, where one of them muſt inevitably periſh. As, among others, in that caſe mentioned by lord Bacon, where two perſons, being ſhipwrecked, and getting on the ſame plank, but finding it not able to ſave them both, one of them thruſts the other from it, whereby he is drowned. He who thus preſerves his own life at the expence of another man's, is excuſable through unavoidable neceſſity, and the principle of ſelf-defence; ſince their both remaining on the ſame weak plank is a mutual, though innocent, attempt upon, and endangering of, each other's life.

Let us next take a view of thoſe circumſtances wherein thoſe two ſpecies of homicide, by miſadventure and ſelf-defence, agree; and thoſe are in their blame and puniſhment. For the law ſets ſo high a value upon the life of a man, that it always intends ſome miſbehaviour in the perſon who takes it away, unleſs by the command or expreſs permiſſion of the law. In the caſe of miſadventure, it preſumes negligence, or at leaſt a want of ſufficient caution in him who was ſo unfortunate as to commit it; who therefore is not altogether faultleſs. And as to the neceſſity which excuſes a man who kills another *ſe defendendo*, lord Bacon intitles it *neceſſitas culpabilis*, and thereby diſtinguiſhes it from the former neceſſity of killing a thief or a malefactor. For the law intends that the quarrel or aſſault aroſe from ſome unknown wrong, or ſome provocation, either in word or deed: and ſince in quarrels both parties may be, and uſually are, in ſome fault; and it ſcarce can be tried who was originally in the wrong: the law will not hold the ſurvivor entirely guiltleſs. But it is clear, in the other caſe, that where I kill a thief who breaks into my houſe, the original default can never be upon my ſide. The law beſides may have a farther view, to make the crime of homicide more odious, and to caution men how they venture to kill another upon their own private judgment; by ordaining, that he who ſlays his neighbour without an expreſs warrant from the law ſo to do, ſhall in no caſe be abſolutely free from guilt.

Nor is the law of England ſingular in this reſpect. Even the ſlaughter of enemies required a ſolemn purgation among the Jews; which implies, that the death of a man, however it happens, will leave ſome ſtain behind it. And the Moſaical law appointed certain cities of refuge for him "who killed his neighbour unawares; as if a man goeth into the wood with his neighbour to hew wood, and his hand fetcheth a ſtroke with the ax to cut down a tree, and the head ſlippeth from the helve, and lighteth upon his neighbour that he die, he ſhall flee into one of thoſe cities and live." But it ſeems he was not held wholly blameleſs, any more than in the Engliſh law; ſince the avenger of blood might ſlay him before he reached his aſylum, or if he afterwards ſtirred out of it till the death of the high prieſt. In the imperial law likewiſe caſual homicide was excuſed, by the indulgence of the emperor ſigned with his own ſign manual, "*adnotatione principis*;" otherwiſe, the death of a man, however committed, was in ſome degree puniſhable. Among the Greeks, homicide by miſfortune was expiated by voluntary baniſhment for a year. In Saxony, a fine is paid to the kindred of the ſlain; which alſo, among the weſtern Goths, was little inferior to that of voluntary homicide: and in France, no perſon is ever abſolved in caſes of this nature, without a largeſs to the poor, and the charge of certain maſſes for the ſoul of the party killed.

The penalty inflicted by the Engliſh laws is ſaid by Sir Edward Coke to have been anciently no leſs than death; which, however, is with reaſon denied by later and more accurate writers. It ſeems rather to have conſiſted in a forfeiture, ſome ſay, of all the goods and chattels, others only of part of them, by way of fine or *weregild:* which was probably diſpoſed of, as in France, *in pios uſus*, according to the humane ſuperſtition of the times, for the benefit of *his* ſoul who was thus ſuddenly ſent to his account with all his imperfections on his head. But that reaſon having long ceaſed, and the penalty (eſpecially if a total forfeiture) growing more ſevere than was intended, in proportion as perſonal property has become more conſiderable, the delinquent has now, and has as early as our records will reach, a pardon and writ of reſtitution of his goods as a matter of courſe and right, only paying for ſuing out the ſame. And, indeed, to prevent this expenſe, in caſes where the death has notoriouſly happened by miſadventure or in ſelf-defence, the judges will uſually permit (if not direct) a general verdict of acquittal.

III. Felonious homicide is an act of a very different nature from the former, being the killing of a human creature of any age or ſex, without juſtification or excuſe. This may be done either by killing one's ſelf, or another man: for the conſideration of which ſee the articles SELF *Murder*, MURDER, and MANSLAUGHTER.

HOMILY, in eccleſiaſtical writers, a ſermon or diſcourſe upon ſome point of religion, delivered in a plain manner, ſo as to be eaſily underſtood by the common people. The word is Greek, ομιλια; formed of ομιλος, *cœtus*, "aſſembly or council."

The Greek homily, ſays M. Fleury, ſignifies a familiar diſcourſe, like the Latin *ſermo*; and diſcourſes delivered in the church took theſe denominations, to intimate that they were not harangues or matters of oſtentation and flouriſh, like thoſe of profane orators, but familiar and uſeful diſcourſes, as of a maſter to his diſciples, or a father to his children.

All the homilies of the Greek and Latin fathers are compoſed by the biſhops. We have none of Tertullian, Clemens Alexandrinus, and many other learned perſons; becauſe, in the firſt ages, none but biſhops were admitted to preach. The privilege was not ordinarily allowed to prieſts till toward the fifth century. St Chryſoſtom was the firſt preſbyter that preached ſtatedly. Origen and St Auguſtine alſo preached; but it was by a peculiar licence or privilege.

Photius diſtinguiſhes *homily* from *ſermon*; in that the homily was performed in a more familiar manner, the prelate interrogating and talking to the people, and they in their turn anſwering and interrogating him, ſo that it was properly a converſation; whereas the ſermon was delivered with one form, and in the pulpit, after the manner of the orators.

The practice of compiling homilies, which were to be committed to memory, and recited by ignorant or indolent prieſts, commenced towards the cloſe of the 8th century; when Charlemagne ordered Paul Deacon and Alcuin to form homilies or diſcourſes upon the Goſpels and Epiſtles, from the ancient doctors of the church. This gave riſe to that famous collection intitled the *Homiliarium of Charlemagne*, and which being followed as a model by many productions of the ſame kind, compoſed by private perſons, from a principle of pious zeal, contributed much (ſays Moſheim) to nouriſh the indolence, and to perpetuate the ignorance of a worthleſs clergy.

There are ſtill extant ſeveral fine homilies, compoſed by the ancient fathers, particularly St Chryſoſtom and St Gregory.

Clementine HOMILIES, in eccleſiaſtical hiſtory, are nineteen homilies in Greek, publiſhed by Cotelerius, with two letters prefixed; one of them written in the name of Peter, the other in the name of Clement, to James biſhop of Jeruſalem; in which laſt letter they are intitled Clement's Epitome of the Preaching and Travels of Peter. According to Le Clerc, theſe homilies were compoſed by an Ebionite in the ſecond century; but Montfaucon ſuppoſes that they were forged long after the age of St Athanaſius. Dr Lardner apprehends, that the Clementine homilies were the original or firſt edition of the Recognitions; and that they are the ſame with the work cenſured by Euſebius under the title of Dialogues of Peter and Apion.

HOMINE REPLEGIANDO, a writ for the bailing of a man out of priſon when he is confined without commandment of the king or his judges, or for any cauſe that is repleviable. But this writ is now ſeldom uſed; a writ of *habeas corpus* being ſued out on the neceſſary occaſions.

HOMMOC, a name given by mariners to a hilloc or ſmall eminence of land, reſembling the figure of a cone, and appearing on the ſea-coaſt of any country.

HOMO, MAN, is ranked by Linnæus under the order of primates; and characteriſed by having four parallel foreteeth both in the upper and lower jaw, and two mammæ on the breaſt. The ſpecies, according to this author, are two, *viz.* the homo ſapiens, and the homo troglodytes.

He ſubdivides the homo ſapiens into five varieties, *viz.* the American, the European, the Aſiatic, the African, and what he calls the *monſtrous.* See MAN.

The troglodytes, or orang outang, is a native of Ethiopia, Java, and Amboina. His body is white; he walks erect; and is about one-half the ordinary human ſize. He generally lives about 25 years. He conceals himſelf in caves during the day, and ſearches for his prey in the night. He is ſaid to be exceedingly ſagacious, but is not endowed with the faculty of ſpeech. See TROGLODYTES, SIMIA, and COMPARATIVE ANATOMY, p. 250, col. 2.

HOMOGENEOUS, or HOMOGENEAL (compoſed of the Greek ομος *like,* and γενος *kind*), is a term applied to various ſubjects, to denote, that they conſiſt of ſimilar parts, or of parts of the ſame nature and kind: in contradiction to *heterogeneous,* where the parts are of different natures, &c.

HOMOLOGATION, in the civil law, the act of confirming or rendering a thing more valid and ſolemn, by publication, repetition, or recognition thereof.—The word comes from the Greek ομολογια "conſent, aſſent;" formed of ομος *ſimilis,* "like," and λογος of λογειν, *dicere,* "to ſay;" *q. d.* to ſay the ſame thing, to conſent, agree.

HOMOLOGOUS, in geometry, an appellation given to the correſponding ſides and angles of ſimilar figures, as being proportional to each other.

HONAN, a province of China, bounded on the north by that of Ptecheli and Chanſi, on the weſt by Chanſi, on the ſouth by Houquang, and on the eaſt by Chantong. Every thing that can contribute to render a country delightful is found united in this province; the Chineſe therefore call it *Tong-hoa* or *the middle flower:* it is indeed ſituated almoſt in the centre of China. The ancient emperors, invited by the mildneſs of the climate and the beauty of the country, fixed their reſidence here for ſome time. The abundance of its fruits, paſtures, and corn, the effeminacy of its inhabitants (who are accounted extremely voluptuous), and laſtly, the cheapneſs of proviſions, have no doubt prevented trade from being ſo flouriſhing here as in other provinces of the empire. The whole country is flat excepting towards the weſt, where there ariſes a long chain of mountains, covered with thick foreſts; and the land is in ſuch a high ſtate of cultivation, that thoſe who travel through it imagine they are walking in an immenſe garden.—Beſides the river Hoangho, which traverſes this province, it is watered by a great number of ſprings and fountains; it has alſo a valuable lake, which invites to its banks a prodigious number of workmen, becauſe its water has the property of communicating luſtre to ſilk, which cannot be imitated. Excluſive of forts, caſtles, and places of ſtrength, this province contains eight *fou* or cities of the firſt claſs, and 102 of the ſecond and third. In one of theſe cities named *Nanyang,* is found a kind of ſerpent, the ſkin of which is marked with ſmall white ſpots: the Chineſe phyſicians ſteep it in wine, and uſe it afterwards as an excellent remedy againſt the palſy.

HONAN-Fou, a city of the above province, ſituated amidſt mountains and between three rivers. The Chineſe formerly believed this city to be the centre of the earth, becauſe is was in the middle of their empire. Its juriſdiction is very extenſive; for it comprehends one city of the ſecond claſs and thirteen of the third; one of theſe cities named *Teng-fong-hien,* is famous on account of the tower erected by the celebrated Tcheou-kong for an obſervatory; there is ſtill to be ſeen in it an inſtrument which he made uſe of to find the ſhadow at noon, in order to determine the latitude. This aſtronomer lived above a thouſand years before the Chriſtian era, and the Chineſe pretend that he invented the mariner's compaſs.

HONDEKOOTER (Melchior), a famous Dutch painter born at Utrecht, excelled in painting animals, and eſpecially birds. His father and grandfather were of the ſame profeſſion, and their ſubjects the ſame. He was trained up to the art by his father; but ſurpaſſed not only him, but even the beſt of his cotemporaries in a very high degree. Till he was ſeventeen years of age, he continued under the direction of his father, and accuſtomed himſelf to paint ſeveral ſorts of birds; but particularly he was pleaſed to repreſent cocks, hens, ducks, chickens, and peacocks, which he deſcribed in an elegant variety of actions and attitudes.—After his father's death, which happened in 1653, he received ſome inſtructions from his uncle John Baptiſt Weeninx; but his principal and beſt inſtructor was nature, which he ſtudied with intenſe application. His pencil was wonderfully neat and delicate; his touch light; his colouring exceedingly natural, lively, and remarkably tranſparent; and the feathers of his fowls were expreſſed with ſuch a ſwelling ſoftneſs, as might readily and agreeably deceive the eye of any ſpectator. It is reported that he had trained up a cock to ſtand in any attitude he wanted to deſcribe, and that it was his cuſtom to place that creature near his eaſel; ſo that at the motion of his hand the bird would fix itſelf in the proper poſture, and would continue in that particular poſition without the ſmalleſt perceptible alteration for ſeveral hours at a time. The landſcapes which he introduces as the back grounds of his pictures, are adapted with peculiar judgment and ſkill, and admirably finiſhed; they harmonize with his ſubject, and always increaſe the force and the beauty of his principal objects. His touch was very ſingular, in imitating the natural plumage of the fowls he painted; which not only produced a charming effect, but alſo may prove ſerviceable to an intelligent obſerver, to aſſiſt him in determining which are the genuine works of this maſter, and which are impoſitions. His pictures ſell at a high price, and are much ſought after. He died at Utrecht in 1695, aged 59.

HONDURAS, a province of North America in New Spain, lying on the North Sea, being about 370 miles in length, and 200 in breadth; it was diſcovered by Chriſtopher Columbus in the year 1502. The Engliſh have been poſſeſſed of the logwood country on the bay of Honduras a great while, and cut large quantities every year. The Moſquito native Americans live in the eaſtern parts; and being independent of the Spaniards, have entered into treaties with the Engliſh, and ſerve them in ſeveral capacities. This province is watered by ſeveral rivers, which enrich the country by their inundations; and it is very fertile in Indian corn. It is ſaid there are ſome mines of gold and ſilver in this province. Valadolid is the capital town.

HONE, a fine kind of whet ſtone, uſed for ſetting razors, pen-knives, and the like.

HONEY, a ſweet vegetable juice, collected by the bees from the flowers of various plants, and depoſited in the cells of the comb; from which it is extracted either by ſpontaneous percolation through a ſieve in a warm place, the comb being ſeparated and laid thereon, or by expreſſion. That which runs ſpontaneouſly is purer than that which is expreſſed, a quantity of the wax and other matters being forced out along with it by the preſſure. The beſt ſort of honey is of a thick conſiſtence, a whitiſh colour inclining to yellow, an agreeable ſmell, and pleaſant taſte: both the colour and flavour are ſaid to differ in ſome degree, according to the plants which the bees collect it from. It is ſuppoſed that honey is merely the juice of the flower perſpiring, and becoming inſpiſſated thereon; and that the bee takes it up with its proboſcis, and carries it to be depoſited in its waxen cells, with which the young bees are to be fed in ſummer, and the old bees in winter: but it is certain, that honey can be procured by no other method of collecting this juice than by the bees. The honey wrought by the young bees, and that which is permitted to run from the comb without heat or preſſure, is white and pure, and called *virgin's honey*. The honey of old bees and that which is forced from the comb by heat or preſſure, is yellow, from the wax. Honey produced where the air is clear and hot, is better than that where the air is variable and cold.—The honey of Narbonne in France, where roſemary abounds, is ſaid to have a very manifeſt flavour of that plant, and to be imitable by adding to other honey an infuſion of roſemary flowers.

Honey, conſidered as a medicine, is a very uſeful detergent and aperient, powerfully diſſolving viſcid juices, and promoting the expectoration of tough phlegm. In ſome particular conſtitutions it has an inconvenience of griping, or of proving purgative; which is ſaid to be in ſome meaſure prevented by previouſly boiling the honey. This, however, with all conſtitutions, is by no means effectual; and the circumſtance mentioned has had ſo much weight with the Edinburgh college, that they do not now employ it in any preparation, and have entirely rejected the mella medicata, ſubſtituting ſyrups in their place: but there can be no doubt that honey is very uſeful in giving form to different articles, although there be ſome individuals with whom it may diſagree. In order, however, to obtain the good effects of the honey itſelf, it muſt be uſed to a conſiderable extent, and as an article of diet. The following remarkable inſtances of the good effects of honey in ſome aſthmatic caſes, given by Dr Monro in his Medical and Pharmaceutical Chemiſtry, deſerve to be here inſerted. "The late Dr John Hume, one of the commiſſioners of the ſick and hurt of the royal navy, was for many years violently afflicted with the aſthma. Having taken many medicines without receiving relief, he at laſt reſolved to try the effects of honey, having long had a great opinion of its virtues as a pectoral. For two or three years he ate ſome ounces of it daily, and got entirely free of his aſthma, and likewiſe of a gravelly complaint which he had long been afflicted with. About two years after he had recovered his health, when he was ſitting one day in the office for the ſick and hurt, a perſon labouring under a great difficulty of breathing, who looked as if he could not live many days, came to him, and aſked him by what means he had been cured of his aſthma? Dr Hume told him the particulars of his own caſe, and mentioned to him the means by which he had found relief. For two years after he heard nothing of this perſon, who was a ſtranger to him, and had ſeemed ſo bad that he did not imagine that he could have lived many days, and therefore had not even aſked him who he was; but at the end of that period, a man ſeemingly in good health, and decently dreſſed, came to the ſick and hurt office, and returned him thanks for his cure, which he aſſured him had been entirely brought about by the free uſe of honey."

Honey-Dew, a ſweet ſaccharine ſubſtance found on the leaves of certain trees, of which bees are very fond, by the huſbandmen ſuppoſed to fall from the heavens like common dew. This opinion hath been refuted, and the true origin of this and other ſaccharine dews ſhown by the Abbe Boiſſier de Sauvages, in a memoir read before the Society of Sciences at Montpelier. "Chance (ſays the Abbe) afforded me an opportunity of ſeeing this juice in its primitive form on the leaves of the holm oak: theſe leaves were covered with thouſands of ſmall round globules or drops, which, without touching one another, ſeemed to point out the pore from whence each of them had proceeded. My taſte informed me that they were as ſweet as honey: the honey-dew on a neighbouring bramble did not reſemble the former, the drops having run together; owing either to the moiſture of the air which had diluted them, or to the heat which had expanded them. The dew was become more viſcous, and lay in large drops, covering the leaves; in this form it is uſually ſeen.

"The oak had at this time two ſorts of leaves; the old, which were ſtrong and firm; and the new which were tender, and newly come forth. The honey-dew was found only on the old leaves; though theſe were covered by the new ones, and by that means ſheltered from any moiſture that could fall from above. I obſerved the ſame on the old leaves of the bramble, while the new leaves were quite free from it. Another proof that this dew proceeds from the leaves is, that other neighbouring trees not furniſhed with a juice of this kind had no moiſture on them; and particularly the mulberry, which is a very particular circumſtance, for this juice is a deadly poiſon to ſilkworms. If this juice fell in the form of a dew, miſt, or fog, it would wet all the leaves without diſtinction, and every part of the leaves, under as well as upper. Heat may have ſome ſhare in its production: for though

Honey.

Honey, Honfleur.

though the common heat promotes only the tranſpiration of the more volatile and fluid juices, a ſultry heat, eſpecially if reflected by clouds, may ſo far dilate the veſſel as to produce a more viſcous juice, ſuch as the honey-dew.

“ The ſecond kind of honey-dew, which is the chief reſource of bees after the ſpring-flowers and dew by tranſpiration on leaves are paſt, owes its origin to a ſmall inſect called a *vine-fretter* ; the excrement ejected with ſome force by this inſect makes a part of the moſt delicate honey known in nature (ſee APIS). Theſe vine-fretters reſt during ſeveral months on the barks of particular trees, and extract their food by piercing that bark, without hurting or deforming the tree. Theſe inſects alſo cauſe the leaves of ſome trees to curl up, and produce galls upon others. They ſettle on branches that are a year old. The juice, at firſt perhaps hard and crabbed, becomes, in the bowels of this inſect, equal in ſweetneſs to the honey obtained from the flowers and leaves of vegetables; excepting that the flowers may communicate ſome of their eſſential oil to the honey, and this may give it a peculiar flavour, as happened to myſelf by planting a hedge of roſemary near my bees at Sauvages : the honey has taſted of it ever ſince, that ſhrub continuing long in flower.

“ I have obſerved two ſpecies of vine-fretters, which live unſheltered on the bark of young branches ; a larger and a leſſer. The leſſer ſpecies is of the colour of the bark upon which it feeds, generally green. It is chiefly diſtinguiſhed by two horns, or ſtrait, immoveable, fleſhy ſubſtances, which riſe perpendicularly from the lower ſides of the belly, one on each ſide. This is the ſpecies which live on the young branches of bramble and elder. The larger ſpecies is double the ſize of the other ; is of a blackiſh colour ; and inſtead of the horns which diſtinguiſh the other, have in the ſame part of the ſkin a ſmall button, black and ſhining like jet.

“ The buzzing of bees in a tuft of holm-oak, made me ſuſpect that ſomething very intereſting brought ſo many of them thither. I knew that it was not the ſeaſon for expecting honey-dew, nor was it the place where it is uſually found ; and was ſurpriſed to find the tufts of leaves and branches covered with drops which the bees collected with a humming noiſe. The form of the drops drew my attention, and led me to the following diſcovery. Inſtead of being round like drops which had fallen, each formed a ſmall longiſh oval. I ſoon perceived from whence they proceeded. The leaves covered with theſe drops of honey were ſituated beneath a ſwarm of the larger black vine-fretters ; and on obſerving theſe inſects, I perceived them from time to time raiſe their bellies, at the extremity of which there then appeared a ſmall drop of an amber colour, which they inſtantly ejected from them to the diſtance of ſome inches. I found by taſting ſome of theſe drops which I had catched on my hand, that it had the ſame flavour with what had before fallen on the leaves. I afterwards ſaw the ſmaller ſpecies of vine-fretters eject their drops in the ſame manner. This ejection is ſo far from being a matter of indifference to theſe inſects themſelves, that it ſeems to have been wiſely inſtituted to procure cleanlineſs in each individual, as well as to preſerve the whole ſwarm from deſtruction ; for preſſing as they do one upon another, they would otherwiſe ſoon be glued together, and rendered incapable of ſtirring. The drops thus ſpurted out fall upon the ground, if not intercepted by leaves or branches ; and the ſpots they make on ſtones remain ſome time, unleſs waſhed off by rain. This is the only honey dew that falls ; and this never falls from a greater height than a branch where theſe inſects can cluſter.

“ It is now eaſy to account for a phænomenon which formerly puzzled me greatly. Walking under a lime-tree in the king's garden at Paris, I felt my hand wetted with little drops, which I at firſt took for ſmall rain. The tree indeed ſhould have ſheltered me from the rain, but I eſcaped it by going from under the tree. A ſeat placed near the tree ſhone with theſe drops. And being then unacquainted with any thing of this kind, except the honey-dew found on the leaves of ſome particular trees, I was at a loſs to conceive how ſo glutinous a ſubſtance could fall from the leaves in ſuch ſmall drops : for I knew that rain could not overcome its natural attraction to the leaves till it became pretty large drops ; but I have ſince found, that the lime-tree is very ſubject to theſe vine-fretters.

“ Bees are not the only inſects that feaſt upon this honey ; ants are equally fond of it. Led into this opinion by what naturaliſts have ſaid, I at firſt believed that the horns in the leſſer ſpecies of theſe vine-fretters had in their extremity a liquor which the ants went in ſearch of : but I ſoon diſcovered that what drew the ants after them came from elſewhere, both in the larger and leſſer ſpecies, and that no liquor is diſcharged by the horns. There are two ſpecies of ants which ſearch for theſe inſects. The large black ants follow thoſe which live on the oaks and cheſnut ; the leſſer ants attend thoſe on the elder. But as the ants are not, like the bees, provided with the means of ſucking up fluids ; they place themſelves near the vine-fretters, in order to ſeize the drop the moment they ſee it appear upon the anus ; and as the drop remains ſome time on the ſmall vine-fretter before they can caſt it off, the ants have leiſure to catch it, and thereby prevent the bees from having any ſhare ; but the vine-fretters of the oak and cheſnut being ſtronger, and perhaps more plentifully ſupplied with juice, dart the drop inſtantly, ſo that the larger ants get very little of it.

“ The vine-fretters finding the greateſt plenty of juice in trees about the middle of ſummer, afford alſo at that time the greateſt quantity of honey : and this leſſens as the ſeaſon advances, ſo that in the autumn the bees prefer it to the flowers then in ſeaſon. Though theſe inſects pierce the tree to the ſap in a thouſand places, yet the trees do not ſeem to ſuffer at all from them, nor do the leaves loſe the leaſt of their verdure. The huſbandman therefore acts injudiciouſly when he deſtroys them.”

HONEY-Guide, a curious ſpecies of cuckow. See CUCULUS.

HONEY-Locuſt, or *Three-thorned Acacia*. See GLEDITSIA.

HONEY-Suckle. See LONICERA.

HONFLEUR, a conſiderable ſea-port town of France, in Upper Normandy, with a good harbour, and trade in bone-lace. It is ſeated on the river Seine, in E. Long. 0. 8. N. Lat. 17. 49.

HONI SOIT QUI MAL Y PENSE, q. d. "Evil to him that evil thinks;" the motto of the moſt noble order of the knights of the Garter. See GARTER.

HONITON, a very pleaſant market and borough town in Devonſhire, ſituated 156 miles W. of London, and 16 eaſt of Exeter. It conſiſts of about 400 houſes; and has one church on a hill full half a mile from the town, and a chapel and free grammar-ſchool in the town. It is well paved and lighted, and lakes of water run through it. This place has ſuffered by fires greatly in 1747 and 1765. The market is on Saturday, and one fair in July; its manufactures are ſerge, and rich bone lace and edgings. It was a chartered corporation by James II. but reverted to its old conſtitution on the revolution, and is now governed by a portreeve who is choſen annually. It firſt returned members the 28th Edw. I.

HONORIACI, in antiquity, an order of ſoldiery under the eaſtern empire, who introduced the Goths, Vandals, Alani, Suevi, &c. into Spain. Didymus and Verinianus, two brothers, had, with great vigilance and valour, defended the paſſages of the Pyreneans againſt the Barbarians for ſome time, at their own expence; but being at length killed, the emperor Conſtantius appointed the *honoriaci* to defend thoſe paſſages, who, not contented to lay them open to all the nations of the north then ravaging the Gauls, joined themſelves to them.

HONOUR, a teſtimony of eſteem and ſubmiſſion, expreſſed by words, actions, and an exterior behaviour, by which we make known the veneration and reſpect we entertain for any one on account of his dignity or merit. The word *honour* is alſo uſed in general for the eſteem due to virtue, glory, and reputation. It is alſo uſed for *virtue* and *probity* themſelves, and for an exactneſs in performing whatever we have promiſed; and in this laſt ſenſe we uſe the term, *a man of honour*. But *honour* is more particularly applied to two different kinds of virtue; bravery in men, and chaſtity in women.—Virtue and Honour were deified among the ancient Greeks and Romans, and had a joint temple conſecrated to them at Rome: but afterwards each of of them had ſeparate temples, which were ſo placed, that no one could enter the temple of Honour without paſſing through that of Virtue; by which the Romans were continually put in mind, that virtue is the only direct path to true glory. Plutarch tells us, that the Romans, contrary to their uſual cuſtom, ſacrificed to Honour uncovered; perhaps to denote, that wherever honour is, it wants no covering, but ſhows itſelf openly to the world.

The Spaniſh hiſtorians relate a memorable inſtance of honour and regard to truth. A Spaniſh cavalier in a ſudden quarrel ſlew a Mooriſh gentleman, and fled. His purſuers ſoon loſt ſight of him, for he had unperceived thrown himſelf over a garden wall. The owner, a Moor, happening to be in his garden, was addreſſed by the Spaniard on his knees, who acquainted him with his caſe, and implored concealment. "Eat this," ſaid the Moor (giving him half a peach), "you now "know that you may confide in my protection." He then locked him up in his garden apartment, telling him as ſoon as it was night he would provide for his eſcape to a place of greater ſafety. The Moor then went into his houſe, where he had but juſt ſeated himſelf, when a great croud with loud lamentations, came to his gate, bringing the corpſe of his ſon, who had juſt been killed by a Spaniard. When the firſt ſhock of ſurpriſe was a little over, he learnt from the deſcription given, that the fatal deed was done by the very perſon then in his power. He mentioned this to no one; but as ſoon as it was dark retired to his garden, as if to grieve alone, giving orders that none ſhould follow him. Then accoſting the Spaniard, he ſaid, "Chriſtian, the perſon you have killed is my ſon, his body is now in my houſe. You ought to ſuffer; but you have eaten with me, and I have given you my faith, which muſt not be broken." He then led the aſtoniſhed Spaniard to his ſtables, mounted him on one of his fleeteſt horſes, and ſaid, "Fly far while the night can cover you; you will be ſafe in the morning. You are indeed guilty of my ſon's blood: but God is juſt and good; and I thank him I am innocent of yours, and that my faith given is preſerved."

This point of honour is moſt religiouſly obſerved by the Arabs and Saracens, from whom it was adopted by the Moors of Africa, and by them was brought into Spain. The following inſtance of Spaniſh honour may ſtill dwell in the memory of many living, and deſerves to be handed down to the lateſt poſterity. In the year 1746, when the Britiſh were in hot war with Spain, the Elizabeth of London, captain William Edwards, coming through the Gulph from Jamaica, richly laden, met with a moſt violent ſtorm, in which the ſhip ſprung a leak, that obliged them, for the ſaving of their lives, to run into the Havannah, a Spaniſh port. The captain went on ſhore, and directly waited on the governor, told the occaſion of his putting in, and that he ſurrendered the ſhip as a prize, and himſelf, and his men as priſoners of war, only requeſting good quarter. "No, Sir," replied the Spaniſh governor, "if we had taken you in fair war at ſea, or approaching our coaſt with hoſtile intentions, your ſhip would then have been a prize, and your people priſoners; but when, diſtreſſed by a tempeſt, you come into our ports for the ſafety of your lives, we, though enemies, being men, are bound as ſuch by the laws of humanity to afford relief to diſtreſſed men who aſk it of us. We cannot even againſt our enemies take an advantage of an act of God. You have leave therefore to unload your ſhip, if that be neceſſary, to ſtop the leak; you may refit her here, and traffic ſo far as ſhall be neceſſary to pay the charges; you may then depart, and I will give you a paſs to be in force till you are beyond Bermuda: if after that you are taken, you will then be a lawful prize; but now you are only a ſtranger, and have a ſtranger's right to ſafety and protection." The ſhip accordingly departed, and arrived ſafe in London.

A remarkable inſtance of the like honour is recorded of a poor unenlightened African negro, in Captain Snelgrave's account of his voyage to Guinea. A New England ſloop, trading there in 1752, left a ſecond mate, William Murray, ſick on ſhore, and failed without him. Murray was at the houſe of a black named Cudjoe, with whom he had contracted an acquaintance during their trade. He recovered; and the ſloop being gone, he continued with his black friend till ſome other opportunity ſhould offer of his getting home.

In the mean time a Dutch ſhip came into the road, and ſome of the blacks coming on board her, were treacherouſly ſeized and carried off as their ſlaves. The relations and friends, tranſported with ſudden rage, ran into the houſe of Cudjoe, to take revenge by killing Murray. Cudjoe ſtopt them at the door, and demanded what they wanted. “The white men,” ſaid they, “have carried away our brothers and ſons, and we will kill all white men. Give us the white man you have in your houſe, for we will kill him.” “Nay,” ſaid Cudjoe, “the white men that carried away your relations are bad men, kill them when you can take them; but this white man is a good man, and you muſt not kill him.”—“But he is a white man,” they cried; “and the white men are all bad men, we will kill them all.” “Nay,” ſaid he, “you muſt not kill a man that has done no harm, only for being white. This man is my friend, my houſe is his poſt, I am his ſoldier, and muſt fight for him; you muſt kill me before you can kill him. What good man will ever come again under my roof, if I let my floor be ſtained with a good man's blood?” The negroes ſeeing his reſolution, and being convinced by his diſcourſe that they were wrong, went away aſhamed. In a few days Murray ventured abroad again with his friend Cudjoe, when ſeveral of them took him by the hand, and told him, “They were glad they had not killed him; for as he was a good (meaning innocent) man, their God would have been very angry, and would have ſpoiled their fiſhing.”

HONOUR, in the *beau monde*, has a meaning materially different from the above, and which it is eaſier to illuſtrate than define. It is, however, ſubject to a ſyſtem of rules, called the *law of honour*, conſtructed by people of faſhion, calculated to facilitate their intercourſe with one another, and for no other purpoſe. Conſequently, nothing is conſidered as inconſiſtent with honour, but what tends to incommode this intercourſe. Hence, as Archdeacon Paley ſtates the matter, profaneneſs, neglect of public worſhip or private devotion, cruelty to ſervants, rigorous treatment of tenants or other dependants, want of charity to the poor, injuries done to tradeſmen by inſolvency or delay of payment, with numberleſs examples of the ſame kind, are accounted no breaches of honour; becauſe a man is not a leſs agreeable companion for theſe vices, nor the worſe to deal with in thoſe concerns which are uſually tranſacted between one gentleman and another. —Again, the *law of honour* being conſtituted by men occupied in the purſuit of pleaſure, and for the mutual conveniency of ſuch men, will be found, as might be expected from the character and deſign of the law-makers, to be, in moſt inſtances, favourable to the licentious indulgence of the natural paſſions. Thus it allows of fornication, adultery, drunkenneſs, prodigality, duelling, and revenge in the extreme; and lays no ſtreſs upon the virtues oppoſite to theſe.

HONOUR or *Rank*.—The degrees of honour which are obſerved in Britain may be comprehended under theſe two heads, viz. *nobiles majores*, and *nobiles minores*. Thoſe included under the firſt rank are, archbiſhops, dukes, marquiſes, earls, viſcounts, biſhops, and barons; which are all diſtinguiſhed by the reſpective ornaments of their eſcutcheons: and thoſe of the laſt are baronets, knights, eſquires, and gentlemen. There are ſome authors who will have baronets to be the laſt under the firſt rank; and their reaſon is, becauſe their honour is hereditary, and by patent, as that of the nobility. See COMMONALTY and NOBILITY.

HONOURS *of War*, in a ſiege, is, when a governor, having made a long and vigorous defence, is at laſt obliged to ſurrender the place to the enemy for want of men and proviſions, and makes it one of his principal articles to march out with the *honours of war*: that is, with ſhouldered arms, drums beating, colours flying, and all their baggage, &c.

Military HONOURS. All armies ſalute crowned heads in the moſt reſpectful manner, drums beating a march, colours and ſtandards dropping, and officers ſaluting. Their guards pay no compliment, except to the princes of the blood; and even that by courteſy, in the abſence of the crowned head.

To the commander in chief the whole line turns out without arms, and the camp-guards beat a march, and ſalute. To generals of horſe and foot they beat a march and ſalute. Lieutenant-generals of ditto, three ruffs, and ſalute. Major-generals of ditto, two ruffs, and ſalute. Brigadiers of ditto, reſted arms, one ruff, and ſalute. Colonels of ditto, reſted arms, and no beating. Centinels reſt their arms to all field-officers, and ſhoulder to every officer. All governors, that are not general officers, ſhall, in all places where they are governors, have one ruff, with reſted arms; but for thoſe who have no commiſſion as governors, no drum ſhall beat. Lieutenant-governors ſhall have the main-guard turned out to them with ſhouldered arms.

Pruſſian HONOURS *of War*, chiefly imitated by moſt powers in Europe, are,

To the king all guards beat the march, and all officers ſalute. Field-marſhals received with the march, and ſaluted in the king's abſence. General of horſe or foot, four ruffs; but if he commands in chief, a march and ſalute. Lieutenant-generals of horſe or foot, commanding or not, guards beat three ruffs. Major-generals of horſe and foot, two ruffs. Officers, when their guards are under arms, and a general makes a ſignal, muſt reſt to him, but not beat; when not got under arms, and a ſignal made, only ſtand by their arms. Village-guards go under arms only to the king, field-marſhals, generals of horſe and foot, and to the general of the day. Generals guards go under arms only to the king, field-marſhals, and the general over whom they mount. Commanding officers of regiments and battalions, their own quarter and rear guards to turn out; but not to other field officers, unleſs they are of the day. Generals in foreign ſervice, the ſame.

HONOURS *paid by Centinels*. Field-marſhals; two centinels with ordered fire-locks, at their tent or quarters. Generals of horſe or foot; two centinels, one, with his fire-lock ſhouldered, the other ordered. Lieutenant-generals; one, with fire-lock ordered. Major-generals; one, with fire-lock ſhouldered.

The firſt battalion of Britiſh guards go under arms to the king only; not to ſtand by, nor draw up in the rear of their arms to any other; nor to give centinels to foreigners. Second and third battalions draw up behind their arms to the princes, and to field-marſhals;

but when on grenadier guards or out-poſts, they turn out, as other guards do, to the officers of the day. They give one centinel with ſhouldered arms to the princes of the blood, and to field-marſhals when they lie alone in garriſon.

Court of Honour. See *Court of* Chivalry.

Fountain of Honour. In Britain the king is ſo ſtyled, as being the ſource of honours, dignities, &c. See Prerogative.

It is impoſſible that government can be maintained without a due ſubordination of rank; that the people may know and diſtinguiſh ſuch as are ſet over them, in order to yield them their due reſpect and obedience; and alſo that the officers themſelves being encouraged by emulation and the hopes of ſuperiority, may the better diſcharge their functions: and the Engliſh law ſuppoſes, that no one can be ſo good a judge of their ſeveral merits and ſervices as the king himſelf who employs them. It has therefore entruſted him with the ſole power of conferring dignities and honours, in confidence that he will beſtow them upon none but ſuch as deſerve them. And therefore all degrees of nobility, of knighthood, and other titles, are received by immediate grant from the crown: either expreſſed in writing, by writs or letters patent, as in the creation of peers and baronets; or by corporeal inveſtiture, as in the creation of a ſimple knight.

From the ſame principle alſo ariſes the prerogative of erecting and diſpoſing of offices: for honours and offices are in their nature convertible and ſynonymous. All offices under the crown carry in the eye of the law an honour along with them; becauſe they imply a ſuperiority of parts and abilities, being ſuppoſed to be always filled with thoſe that are moſt able to execute them. And, on the other hand, all honours in their original had duties or offices annexed to them: an earl, *comes*, was the conſervator or governor of a county; and a knight, *miles*, was bound to attend the king in his wars. For the ſame reaſon therefore that honours are in the diſpoſal of the king, offices ought to be ſo likewiſe; and as the king may create new titles, ſo may he create new offices: but with this reſtriction, that he cannot create new offices with new fees annexed to them, nor annex new fees to old offices; for this would be a tax upon the ſubject, which cannot be impoſed but by act of parliament. Wherefore, in 13 Hen. IV. a new office being created by the king's letters patent for meaſuring cloths, with a new fee for the ſame, the letters patent were, on account of the new fee, revoked and declared void in parliament.

Upon the ſame or a like reaſon, the king has alſo the prerogative of conferring privileges upon private perſons. Such as granting place or precedence to any of his ſubjects, as ſhall ſeem good to his royal wiſdom: or ſuch as converting aliens, or perſons born out of the king's dominions, into denizens; whereby ſome very conſiderable privileges of natural-born ſubjects are conferred upon them. Such alſo is the prerogative of erecting corporations; whereby a number of private perſons are united and knit together, and enjoy many liberties, powers, and immunities in their politic capacity, which they were utterly incapable of in their natural.

Maids of Honour, are young ladies in the queen's houſehold, whoſe office is to attend the queen when ſhe goes abroad, &c. In England they are ſix in number, and their ſalary 300 l. *per annum* each.

Honour is particularly applied in Engliſh cuſtoms to the more noble kind of ſeignories or lordſhips, whereof other inferior lordſhips or manors hold or depend. As a manor conſiſts of ſeveral tenements, ſervices, cuſtoms, &c. ſo an honour contains divers manors, knights-fees, &c. It was alſo formerly called *beneficium* or *royal fee*, being always held of the king *in capite*.

Honour-Point, in heraldry, is that next above the centre of the eſcutcheon, dividing the upper part into two equal portions.

Honourable, a title conferred on the younger ſons of earls, the ſons of viſcounts and barons; as alſo on ſuch perſons as have the king's commiſſion, and upon thoſe who enjoy places of truſt and honour.

HONOURARY, ſomething done or conferred upon any one, to do him honour. See the article Honour.

Honourary is ſometimes underſtood of a perſon who bears or poſſeſſes ſome poſt or title, only for the name's ſake, without doing any thing of the functions belonging to it, or receiving any advantage from it: thus we ſay honourary counſellors, honourary fellows, &c.

Honourary is alſo uſed for a lawyer's fee, or a ſalary given to public profeſſors in any art or ſcience.

HOOD (Robin), a famous outlaw and deer-ſtealer, who chiefly harboured in Sherwood foreſt in Nottinghamſhire. He was a man of family, which by his pedigree appears to have had ſome title to the earldom of Huntingdon; and played his pranks about the latter end of the 12th century. He was famous for archery, and for his treatment of all travellers who came in his way; levying contributions on the rich, and relieving the poor. Falling ſick at laſt, and requiring to be blooded, he is ſaid to have been betrayed and bled to death. He died in 1247; and was buried at Kirklees in Yorkſhire, then a Benedictine monaſtery, where his graveſtone is ſtill ſhown.

Hood. See Chaperon and Cowl.

Hood, in falconry, is a piece of leather, wherewith the head of a hawk, falcon, or the like, is covered.

Hood Iſland, one of the *Marquesas Iſlands*, in the South Sea. It was diſcovered in April 1774 by Captain Cook, who gave it that name from the perſon who firſt ſaw the land. It is the moſt northerly of the cluſter, and lies in S. Lat. 9. 26. W. Long. 139. 13.

HOOF, the horny ſubſtance that covers the feet of divers animals, as oxen, horſes, &c.

Hoof-bound, in farriery. See there, § xlii.

HOOFT (Peter Cornelius Van), an eminent hiſtorian and poet, born at Amſterdam in 1581. He was lord of Muyden, judge of Goyland, and knight of the order of St Michael. He died at the Hague in 1647. He wrote, 1. An excellent hiſtory of the Netherlands, from the abdication of Charles V. to the year 1588. 2. Several Comedies, and other works. By theſe he acquired ſuch reputation, that the Flemings conſidered him as the Homer and Tacitus of the Netherlands.

HOOGUESTRATTEN, a town of the Netherlands, in Dutch Brabant, and capital of a county of the ſame name. E. Long. 4. 41. N. Lat. 51. 25.

HOOK, in angling, &c. See *Fishing-Hook*.

Hooks, in building, &c. are of various ſorts; ſome of iron and others of braſs, viz. 1. Armour-hooks, which are generally of braſs, and are to lay up arms upon, as guns, muſkets, half-pikes, pikes, javelins, &c. 2. Caſement-hooks. 3. Chimney-hooks, which are made both of braſs and iron, and of different faſhions: their uſe is to ſet the tongs and fire-ſhovel againſt. 4. Curtain-hooks. 5. Hooks for doors, gates, &c. 6. Double line-hooks, large and ſmall. 7. Single line-hooks, large and ſmall. 8. Tenter-hooks of various ſorts. See Tenter.

Hooks of a ſhip, are all thoſe forked timbers which are placed directly upon the keel, as well in her run as in her rake.

Can-Hooks, thoſe which being made faſt to the end of a rope with a nooſe (like that which brewers uſe to ſling or carry their barrels on), are made uſe of for ſlings.

Foot-Hooks, in a ſhip, the ſame with futtocks.

Loof-Hooks, a tackle with two hooks; one to hitch into a cringle of the main or fore-ſail, in the bolt-rope at the leech of the ſail by the clew; and the other is to hitch into a ſtrap, which is ſpliced to the cheſs-tree.

Their uſe is to pull down the ſail, and ſuccour the tackles in a large ſail and ſtiff gale, that all the ſtreſs may not bear upon the tack. It is alſo uſed when the tack is to be ſeized more ſecure, and to take off or put on a bonnet or drabler.

Hook Pins, in architecture, are taper iron pins, only with a hook-head, to pin the frame of a roof or floor together.

HOOKAH, among the Arabs and other nations of the Eaſt, is a pipe of a ſingular and complicated conſtruction, through which tobacco is ſmoked; out of a ſmall veſſel of a globular form, and nearly full of water, iſſue two tubes, one perpendicularly, on which is placed the tobacco; the other obliquely from the ſide of the veſſel, and to that the perſon who ſmokes applies his mouth; the ſmoke by this means being drawn through water, is cooled in its paſſage and rendered more grateful: one takes a whiff, draws up a large quantity of ſmoke, puffs it out of his noſe and mouth in an immenſe cloud, and paſſes the hookah to his neighbour; and thus it goes round the whole circle.—The hookah is known and uſed throughout the eaſt; but in thoſe parts of it where the refinements of life prevail greatly, every one has his hookah ſacred to himſelf; and it is frequently an implement of a very coſtly nature, being of ſilver, and ſet with precious ſtones: in the better kind, that tube which is applied to the mouth is very long and pliant; and for that reaſon is termed the ſnake: people who uſe it in a luxurious manner, fill the veſſel through which the ſmoke is drawn with roſe water, and it thereby receives ſome of the fragrant quality of that fluid.

HOOKE (Robert), a very eminent Engliſh mathematician and philoſopher, was the ſon of Mr John Hooke miniſter of Freſhwater in the Iſle of Wight, where he was born in 1635. He very early diſcovered a genius for mechanics, by making curious toys with great art and dexterity. He was educated under Dr Buſby in Weſtminſter ſchool; where he not only acquired a competent ſhare of Greek and Latin, together with an inſight into Hebrew and ſome other Oriental languages, but alſo made himſelf maſter of a good part of Euclid's elements. About the year 1653 he went to Chriſt-church in Oxford, and in 1655 was introduced to the Philoſophical Society there; where, diſcovering his mechanic genius, he was firſt employed to aſſiſt Dr Willis in his operations in chemiſtry, and afterwards recommended to the honourable Robert Boyle, Eſq; whom he ſerved ſeveral years in the ſame capacity. He was alſo inſtructed in aſtronomy about this time by Dr Seth Ward, Savilian profeſſor of that ſcience; and from henceforward diſtinguiſhed himſelf by many noble inventions and improvements of the mechanic kind. He invented ſeveral aſtronomical inſtruments, for making obſervations both at ſea and land; and was particularly ſerviceable to Mr Boyle, in completing the invention of the air-pump. Sir John Cutler having founded a mechanic ſchool in 1664, he ſettled an annual ſtipend on Mr Hooke for life, intruſting the preſident, council, and fellows, of the Royal Society to direct him with reſpect to the number and ſubject of his lectures; and on the 11th of January 1664-5, he was elected by that ſociety curator of experiments for life, with an additional ſalary. In 1666 he produced to the Royal Society a model for rebuilding the city of London deſtroyed by fire, with which the ſociety was well pleaſed; and the lord mayor and aldermen preferred it to that of the city ſurveyor, though it happened not to be carried into execution. It is ſaid, by one part of this model of Mr Hooke's, it was deſigned to have all the chief ſtreets, as from Leaden-hall to Newgate, and the like, to lie in exact ſtraight lines, and all the other croſs-ſtreets turning out of them at right angles, with all the churches, public buildings, markets, &c. in proper and convenient places. The rebuilding of the city according to the act of parliament requiring an able perſon to ſet out the ground to the proprietors, Mr Hooke was appointed one of the ſurveyors; in which employment he got moſt part of his eſtate, as appeared pretty evident from a large iron cheſt of money found after his death, locked down with a key in it, and a date of the time, which ſhowed it to have been ſo ſhut up above 30 years.—Mr Oldenburgh, ſecretary to the Royal Society, dying in 1677, Mr Hooke was appointed to ſupply his place, and began to take minutes at the meeting in October, but did not publiſh the Tranſactions. In the beginning of the year 1687, his brother's daughter, Mrs Grace Hooke, who had lived with him ſeveral years, died; and he was ſo affected with grief at her death, that he hardly ever recovered it, but was obſerved from that time to become leſs active, more melancholy, and, if that could be, more cynical than ever. At the ſame time, a chancery ſuit in which he was concerned with Sir John Cutler, on account of his ſalary for reading the Cutlerian lectures, made him very uneaſy, and increaſed his diſorder. In 1691, he was employed in forming the plan of the hoſpital near Hoxton, founded by Robert Aſk alderman of London, who appointed archbiſhop Tillotſon one of his executors; and in December the ſame year, Hooke was created doctor of phyſic, by a warrant from that prelate. In July 1696, the chancery ſuit with Sir John Cutler was determined in his favour, to his inexpreſſible ſatisfaction. His joy on that occaſion was found in his diary thus expreſſed; DOMSHLGISSA: that is, *Deo, Optimo, Maximo, ſit honor, laus, gloria, in ſæcula ſæculorum, Amen.* "I was born on this day of July 1635, and God hath given me a new birth: may I never forget his mercies to me! while he gives me breath may I praiſe him!" In the ſame year 1696, an order was granted to him for repeating moſt of his experiments at the expence of the Royal Society, upon a promiſe of his finiſhing the accounts, obſervations, and deductions from them, and of perfecting the deſcription of all the inſtruments contrived by him; but his increaſing illneſs and general decay rendered him unable to perform it. He continued ſome years in this waſting condition; and thus languiſhing till he was quite emaciated, he died March 3d, 1702, at his lodgings in Greſham College, and was buried in St Helen's church, Biſhopſgate ſtreet; his corpſe being attended by all the members of the Royal Society then in London.—As to Mr Hooke's character, it is not in all reſpects one of the moſt amiable. He made but a deſpicable figure as to his perſon, being ſhort of ſtature, very crooked, pale, lean, and of a meagre aſpect, with dark brown hair, very long and hanging over his face uncut and lank. Suitable to his perſon, his temper was penurious, melancholy, miſtruſtful: and, though poſſeſſed of great philoſophical knowledge, he had ſo much ambition, that he would be thought the only man who could invent or diſcover; and thus frequently laid claim to the inventions and diſcoveries of others, while he boaſted of many of his own which he never communicated. In the religious part of his character he was ſo far exemplary, that he always expreſſed a great veneration for the Deity; and ſeldom received any remarkable benefit in life, or made any conſiderable diſcovery in nature, or invented any uſeful contrivance, or found out any difficult problem, without ſetting down his acknowledgments to God, as many places in his diary plainly ſhow. He frequently ſtudied the ſacred writings in the original; for he was acquainted with the ancient languages, as well as with all parts of the mathematics.—He wrote, 1. *Lectiones Cutlerianæ*, 2. *Micrographia*, or Deſcriptions of minute bodies made by magnifying glaſſes. 3. A deſcription of helioſcopes. 4. A deſcription of ſome mechanical improvements of lamps and water-poiſes, quarto. 5. Philoſophical collections. After his death were publiſhed, 6. Poſthumous work collected from his papers by Richard Waller ſecretary to the Royal Society.

Nichol's Anecdotes of Bowyer, &c.

HOOKE (Nathaniel), author of an eſteemed Roman hiſtory and other performances. Of this learned gentleman the earlieſt particulars to be met with are furniſhed by himſelf, in the following modeſt but manly addreſs to the Earl of Oxford, dated Oct. 7. 1722: "My Lord, the firſt time I had the honour to wait upon your lordſhip ſince your coming to London, your lordſhip had the goodneſs to aſk me, what way of life I was then engaged in; a certain *mauvaiſe honte* hindered me at that time from giving a direct anſwer. The truth is, my lord, I cannot be ſaid at preſent to be in any form of life, but rather to live extempore. The late epidemical diſtemper ſeized me, I endeavoured to be rich, imagined for a while that I was, and am in ſome meaſure happy to find myſelf at this inſtant but juſt worth nothing. If your lordſhip, or any of your numerous friends, have need of a ſervant, with the bare qualifications of being able to read and write, and to be honeſt, I ſhall gladly undertake any employments your lordſhip ſhall not think me unworthy of. I have been taught, my lord, that neither a man's natural pride, nor his ſelf-love, is an equal judge of what is fit for him; and I ſhall endeavour to remember, that it is not the ſhort part we act, but the manner of our performance, which gains or loſes us the applauſe of Him who is finally to decide of all human actions. My Lord, I am juſt now employed in tranſlating from the French, a Hiſtory of the Life of the late archbiſhop of Cambray; and I was thinking to beg the honour of your lordſhip's name to protect a work which will have ſo much need of it. The original is not yet publiſhed. 'Tis written by the author of the 'Diſcourſe upon Epic Poetry,' in the new edition of Telemaque. As there are ſome paſſages in the book of a particular nature, I dare not ſolicit your lordſhip to grant me the favour I have mentioned, till you firſt have peruſed it. The whole is ſhort, and pretty fairly tranſcribed. If your lordſhip could find a ſpare hour to look it over, I would wait upon your lordſhip with it, as it may poſſibly be no unpleaſing entertainment. I ſhould humbly aſk your lordſhip's pardon for ſo long an addreſs in a ſeaſon of ſo much buſineſs. But when ſhould I be able to find a time in which your lordſhip's goodneſs is not employed? I am, with perfect reſpect and duty, my lord, your lordſhip's moſt obliged, moſt faithful, and moſt obedient humble ſervant, NATHANIEL HOOKE." The tranſlation here ſpoken of was afterwards printed in 12mo, 1723. From this period till his death, Mr Hooke enjoyed the confidence and patronage of men not leſs diſtinguiſhed by virtue than by titles. In 17 . ; he publiſhed a tranſlation of Ramſay's Travels of Cyrus, in 4to; in 1733 he reviſed a tranſlation of "the Hiſtory of the Conqueſt of Mexico by the Spaniards, by Thomas Townſend, Eſq;" printed in 2 vols 8vo; and in the ſame year he publiſhed, in 4to, the firſt volume of "The Roman Hiſtory, from the building of Rome to the ruin of the Commonwealth; illuſtrated with maps and other plates." In the dedication to this volume, Mr Hooke took the opportnnity of "publicly teſtifying his juſt eſteem for a worthy friend, to whom he had been long and much obliged," by telling Mr Pope, that the diſplaying of his name at the head of thoſe ſheets was "like the hanging out a ſplendid ſign, to catch the traveller's eye, and entice him to make trial of the entertainment the place affords. But," he proceeds, "when I can write under my ſign, that Mr Pope has been here, and was content, who will queſtion the goodneſs of the houſe?" The volume is introduced by "Remarks on the Hiſtory of the Seven Roman Kings, occaſioned by Sir Iſaac Newton's objections to the ſuppoſed 224 years duration of the royal ſtate of Rome." His nervous pen was next employed in digeſting "An Account of the conduct of the Dowager-ducheſs of Marlborough, from her firſt coming to Court to the year 1710, in a Letter from herſelf to Lord ——. in 1742." 8vo. His reward on this occaſion was conſiderable; and the reputation he acquired by the performance much greater. The circumſtances of this tranſaction are thus related by Dr Maty, in his memoirs of Lord Cheſterfield, vol. i. p. 116. "The relict of the great duke of Marlborough, being deſirous of ſubmitting to poſterity her political conduct, as well as her lord's, applied to the earl of Cheſterfield for a proper perſon to receive her information, and put the memoirs of her life into a proper dreſs. Mr Hooke was recommended by him for that purpoſe. He accordingly waited upon the ducheſs, while ſhe was ſtill in bed, oppreſſed by the infirmities of age. But, knowing who he was, ſhe immediately got herſelf lifted up, and continued ſpeaking during ſix hours. She delivered to him, without any notes, her accounts in the moſt lively as well as the moſt connected manner. As ſhe was not tired herſelf, ſhe would have continued longer the buſineſs of this firſt ſitting, had not ſhe perceived that Mr Hooke was quite exhauſted, and wanted refreſhment as well as reſt. So eager was ſhe for the completion of the work, that ſhe inſiſted upon Mr Hooke's not leaving her houſe till he had finiſhed it. This was done in a ſhort time; and her Grace was ſo well pleaſed with the performance, that ſhe complimented the author with a preſent of 5000 l. a ſum which far exceeded his expectations. As ſoon as he was free, and permitted to quit the houſe of his benefactreſs, he haſtened to the earl, to thank him for his favour, and communicated to him his good fortune. The perturbation of mind he was under, occaſioned by the ſtrong ſenſe of his obligation, plainly appeared in his ſtammering out his acknowledgments: and he, who had ſucceeded ſo well as the interpreter of her Grace's ſentiments, could ſcarce utter his own." The ſecond volume of his Roman hiſtory appeared in 1745; when Mr Hooke embraced the fair occaſion of congratulating his worthy friend the earl of Marchmont, on "that true glory, the conſenting praiſe of the honeſt and the wiſe," which his lordſhip had ſo early acquired. To the ſecond volume Mr Hooke added "The Capitoline Marbles, or Conſular Calendars, an ancient Monument accidentally diſcovered at Rome in the year 1545, during the Pontificate of Paul III." In 1758 Mr Hooke publiſhed "Obſervations on, I. The Anſwer of M. l'Abbe de Vertot to the late earl of Stanhope's Inquiry concerning the Senate of ancient Rome: dated December, 1719. II. A Diſſertation upon the Conſtitution of the Roman Senate, by a Gentleman: publiſhed in 1743. III. A Treatiſe on the Roman Senate, by Dr Conyers Middleton: publiſhed in 1747. IV. An Eſſay on the Roman Senate, by Dr Thomas Chapman: publiſhed in 1750;" which he with great propriety inſcribed to Mr Speaker Onſlow. The third volume of Mr Hooke's Roman Hiſtory, to the end of the Gallic war, was printed under his inſpection before his laſt illneſs; but did not appear till after his death, which happened in 1764. The fourth and laſt volume was publiſhed in 1771. Mr Hooke left two ſons; of whom one is a divine of the church of England; the other, a doctor of the Sorbonne, and profeſſor of aſtronomy in that illuſtrious ſeminary.

HOOKER (John), *alias* VOWELL, was born in Exeter, about the year 1524, the ſecond ſon of Robert Hooker, who in 1529 was mayor of that city. He was inſtructed in grammar learning by Dr Moreman, vicar of Menhinit in Cornwall, and thence removed to Oxford; but to what college is uncertain. Having left the univerſity, he travelled to Germany, and reſided ſome time at Cologne, where he kept exerciſes in law, and probably graduated. Thence he went to Straſburg, where he ſtudied divinity under the famous Peter Martyr. He now returned to England, and ſoon after viſited France, intending to proceed to Spain and Italy; but was prevented by a declaration of war. Returning therefore again to England, he fixed his reſidence in his native city, where having married, he was in 1554 elected chamberlain, being the firſt perſon who held that office, and in 1571 repreſented his fellow-citizens in parliament. He died in the year 1601, and was buried in the cathedral church at Exeter. He wrote, among other works, 1. Order and uſage of keeping of parliaments in Ireland. 2. The events of comets or blazing ſtars, made upon the ſight of the comet Pagonia, which appeared in November and December 1577. 3. An addition to the chronicles of Ireland from 1546 to 1568; in the ſecond volume of Holinſhed's chronicle. 4. A deſcription of the city of Exeter, and of the ſondrie aſſaults given to the ſame; Holinſh. chron. vol. iii. 5. A book of enſigns. 6. Tranſlation of the hiſtory of the conqueſt of Ireland from the Latin of Giraldus Cambrenſis; in Holinſh. chron. vol. ii. 7. *Synopſis chorographia*, or an hiſtorical record of the province of Devon; never printed.

HOOKER (Richard), a learned divine, was born at Heavy-tree, near Exeter, in the year 1553. Some of his anceſtors were mayors of that city, and he was nephew to *John Hooker* the hiſtorian. By this uncle he was firſt ſupported at the univerſity of Oxford, with the addition of a ſmall penſion from Dr Jewel, biſhop of Saliſbury, who in 1561 got him admitted one of the clerks of Corpus Chriſti college. In 1573 he was elected ſcholar. In 1577 he took the degree of maſter of arts, and was admitted fellow the ſame year. In July 1579, he was appointed deputy profeſſor of the Hebrew language. In October, in the ſame year, he was for ſome trivial miſdemeanor expelled the college, but was immediately reſtored. In 1581 he took orders; and being appointed to preach at St Paul's croſs, he came to London, where he was unfortunately drawn into a marriage with Joan Churchman, the termagant daughter of his hoſteſs. Having thus loſt his fellowſhip, he continued in the utmoſt diſtreſs till the year 1584, when he was preſented by John Cheny, Eſq. to the rectory of Drayton-Beaucham in Buckinghamſhire. In this retirement he was viſited by Mr Edwin Sandys, and Mr George Cranmer, his former pupils. They found him, with a Horace in his hand, tending ſome ſheep in the common field, his ſervant having been ordered home by his ſweet Xantippe. They attended him to his houſe; but were ſoon deprived of his company by an order from his wife Joan, for him to come and rock the cradle. Mr Sandys's repreſentation to his father, of his tutor's ſituation, procured him the maſterſhip of the Temple. In this ſituation he met with conſiderable moleſtation from one Travers, lecturer of the Temple, and a bigoted Puritan, who in the afternoon endeavoured to confute the doctrine delivered in the morning. From this diſagreeable ſituation

tion he ſolicited archbiſhop Whitgift to remove him to ſome country retirement, where he might proſecute his ſtudies in tranquillity. Accordingly, in 1591, he obtained the rectory of Boſcomb in Wiltſhire, together with a prebend in the church of Saliſbury, of which he was alſo made ſub-dean. In 1594 he was preſented to the rectory of Biſhopſbourne in Kent, where he died in the year 1600. He was buried in his own pariſh-church, where a monument was erected to his memory by William Cooper, Eſq. He was a meek, pious, and learned divine. He wrote, 1. Eccleſiaſtical politie, in eight books, fol. 2. A diſcourſe on juſtification, &c. with two other ſermons, Oxford 1612, 4to. Alſo ſeveral other ſermons printed with the Eccleſiaſtical Politie.

HOOKER, in naval architecture, a veſſel much uſed by the Dutch, built like a pink, but rigged and maſted like a hoy.—Hookers will lie nearer a wind than veſſels with croſs-ſails can do. They are from 50 to 200 tons burden, and with a few hands will ſail to the Eaſt Indies.

HOOP, a piece of pliant wood, or iron, bent into a circular form, commonly uſed for ſecuring caſks, &c.

Driving a HOOP, a boyiſh exerciſe, of good effect in rendering the limbs pliable, and for ſtrengthening the nerves.

HOOPER (John), biſhop of Worceſter, and a martyr in the Proteſtant cauſe, was born in Somerſetſhire, and educated at Oxford, probably in Merton-college. In 1518 he took the degree of bachelor of arts, and afterwards became a Ciſtercian monk; but at length, diſliking his fraternity, he returned to Oxford, and there became infected with Lutheraniſm. In 1539, he was made chaplain and houſe-ſteward to Sir John Arundel, who afterwards ſuffered with the protector in the reign of Edward VI. But *that very catholic knight*, as Wood calls him, diſcovering his chaplain to be a heretic, Hooper was obliged to leave the kingdom. After continuing ſome time in France, he returned to England, and lived with a gentleman called *Seintlow*: but being again diſcovered, he eſcaped in the habit of a ſailor to Ireland; thence embarked for the continent, and fixed his abode in Switzerland. —When king Edward came to the crown, Mr Hooper returned once more to his native country. In 1550, by his old patron Sir John Arundel's intereſt with the earl of Warwick, he was conſecrated biſhop of Glouceſter; and in 1552 was nominated to the ſee of Worceſter, which he held *in commendam* with the former. But queen Mary had ſcarce aſcended the throne, before his lordſhip was impriſoned, tried, and, not chooſing to recant, condemned to the flames. He ſuffered this terrible death at Glouceſter, on the 9th of February 1554, being then near 60 years of age. He was an avowed enemy to the church of Rome, and not perfectly reconciled to what he thought remnants of Popery in the church of England. In the former reign he had been one of Bonner's accuſers, which ſufficiently accounts for his being one of queen Mary's firſt ſacrifices to the holy ſee. He was a perſon of good parts and learning, as may be found in Fox's Book of Martyrs.

HOOPER (George), a very learned writer, biſhop of Bath and Wells, was well ſkilled in mathematics, and in the eaſtern learning and languages. He ſat in thoſe ſees above 24 years, often refuſed a ſeat in the privy council, and could not be prevailed upon to accept of the biſhopric of London on the death of biſhop Compton. He wrote, 1. The church of England free from the imputation of Popery. 2. A diſcourſe concerning Lent. 3. New danger of Preſbytery. 4. An inquiry into the ſtate of the ancient meaſures. 5. *De Valentinianorum hæreſi conjecturæ*. 6. Several ſermons; and other works.

HOOPING-COUGH. See (the Index ſubjoined to) MEDICINE.

HOOPOE. See UPUPA.

HOORNBECK (John), profeſſor of divinity in the univerſities of Leyden and Utrecht, was born at Harlaem in 1617. He underſtood the Latin, Hebrew, Chaldaic, Syriac, Rabbinical, Dutch, German, Engliſh, French, and Italian languages; and publiſhed many works, among which are, 1. A refutation of Socinianiſm, in 3 vols 4to. 2. A treatiſe for the conviction of the Jews. 3. Of the converſion of the Heathens. 4. Theological inſtitutions, &c. which are written in Latin. Mr Bayle repreſents him as a complete model of a good paſtor and divinity profeſſor.

HOP, in botany. See HUMULUS.

HOPS were firſt brought into England from the Netherlands in the year 1524. They are firſt mentioned in the Engliſh ſtatute-book in the year 1552, *viz.* in the 5 and 6 of Edw. VI. cap. 5. And by an act of parliament of the firſt year of king James I. *anno* 1603, cap. 18. it appears, that hops were then produced in abundance in England.

The hop being a plant of great importance in the article of brewing, we ſhall conſider what relates to the culture and management of it, under the following heads:

Of *Soil*. As for the choice of their hop-grounds, they eſteem the richeſt and ſtrongeſt grounds the moſt proper; and if it be rocky within two or three feet of the ſurface the hops will proſper well; but they will by no means thrive on a ſtiff clay or ſpongy wet land.

The Kentiſh planters account new land beſt for hops; they plant their hop gardens with apple trees at a large diſtance, and with cherry-trees between; and when the land hath done its beſt for hops, which they reckon it will in about ten years, the trees may begin to bear. The cherry trees laſt about 30 years, and by that time the apple trees are large, they cut down the cherry trees.

The Eſſex planters account a moory land the moſt proper for hops.

As to the ſituation of a hop-ground, one that inclines to the ſouth or weſt is the moſt eligible; but if it be expoſed to the northeaſt or ſouthweſt winds, there ſhould be a ſhelter of ſome trees at a diſtance, becauſe the northeaſt winds are apt to nip the tender ſhoots in the ſpring; and the ſouthweſt winds frequently break and blow down the poles at the latter end of the ſummer, and very much endanger the hops.

In the winter-time provide your ſoil and manure for the hop-ground againſt the following ſpring.

If the dung be rotten, mix it with two or three parts of common earth, and let it incorporate together till you have occaſion to make uſe of it in making your hop hills; but if it be new dung, then let it be mixed as before till the ſpring in the next year, for new dung is very injurious to hops.

Dung of all ſorts was formerly more commonly made uſe of than it is now, eſpecially when rotted and turned to mould, and they who have no other manure muſt uſe it; which if they do, cows or hogs-dung, or human ordure mixed with mud, may be a proper compoſt, becauſe hops delight moſt in a manure that is cool and moiſt

Planting. Hops require to be planted in a ſituation ſo open, as that the air may freely paſs round and between them, to dry up and diſſipate the moiſture, whereby they will not be ſubject to fire-blaſts, which often deſtroy the middles of large plantations, while the outſides remain unhurt.

As for the preparation of the ground for planting, it ſhould, in the preceding winter, be plowed and harrowed even; and then lay upon it in heaps a good quantity of freſh rich earth, or well rotted dung and earth mixed together, ſufficient to put half a buſhel in every hole to plant the hops in, unleſs the natural ground be very freſh and good.

The hills where the hops are to be planted ſhould be eight or nine feet aſunder, that the air may freely paſs between them; for in cloſe plantations, they are very ſubject to what the hop-planters call the *fire-blaſt*.

If the ground is intended to be ploughed with horſes between the hills, it will be beſt to plant them in ſquares checquerwiſe; but if the ground is ſo ſmall that it be may done with the breaſt-plough or ſpade the holes ſhould be ranged in a quincunx form. Which way ſoever you make uſe of it, a ſtake ſhould be ſtuck down at all the places where the hills are to be made

Perſons ought to be very curious in the choice of the plants as to the kind of hop; for if the hop garden be planted with a mixture of ſeveral ſorts of hops that ripen at ſeveral times; it will cauſe a great deal of trouble, and be a great detriment to the owner.

The two beſt ſorts are the white and the grey kinds; the latter is a large ſquare hop, more hardy, and is the more plentiful bearer, and ripens later than the former.

There is alſo another ſort of the white kind, which ripens a week or ten days before the common; but this is tender, and a leſs plentiful bearer; but it has this advantage, that it comes firſt to market.

But if three grounds, or three diſtant parts of one ground, be planted with theſe three ſorts, there will be this conveniency, that they may be picked ſucceſſively as they become ripe. The ſets ſhould be five or ſix inches long, with three or more joints or buds on them.

If there be a ſort of hop you value, and would increaſe plants and ſets from, the ſuperfluous binds may be laid down when the hops are tied, cutting off the tops, and burying them in the hill; or when the hops are dreſſed, all the cuttings may be ſaved; for almoſt every part will grow, and become a good ſet the next ſpring.

As to the ſeaſons of planting hops, the Kentiſh planters beſt approve the months of October and March, both which ſometimes ſucceed very well; but the ſets are not to be had in October, unleſs from ſome ground that is to be deſtroyed; and likewiſe there is ſome danger that the ſets may be rotted, if the winter prove very wet; therefore the moſt uſual time of procuring them is in March, when the hops are cut and dreſſed.

As to the manner of planting the ſets, there ſhould be five good ſets planted in every hill, one in the middle, and the reſt round about ſloping, the tops meeting at the centre; they muſt ſtand even with the ſurface of the ground; let them be preſſed cloſe with the hand, and covered with fine earth, and a ſtick ſhould be placed on each ſide the hill to ſecure it.

The ground being thus planted, all that is to be done more during that ſummer, is to keep the hills clear from weeds, and to dig up the ground about the month of May, and to raiſe a ſmall hill round about the plants. In June you muſt twiſt the young bind or branches together into a bunch or knot; for if they are tied up to ſmall poles the firſt year, in order to have a few hops from them, it will not countervail the weakening of the plants.

A mixture of compoſt or dung being prepared for your hop ground, the beſt time for laying it on, if the weather prove dry, is about Michaelmas, that the wheels of the dung cart may not injure the hops, nor furrow the ground: if this be not done then, you muſt be obliged to wait till the froſt has hardened the ground, ſo as to bear the dung cart; and this is alſo the time to carry on your new poles, to recruit thoſe that are decayed, and to be caſt out every year.

If you have good ſtore of dung, the beſt way will be to ſpread it in the alleys all over the ground, and to dig it in the winter following. The quantity they will require will be 40 loads to an acre, reckoning about 30 buſhels to the load.

If you have not dung enough to cover all the ground in one year, you may lay it on one part one year, and on the reſt in another, or a third; for there is no occaſion to dung the ground after this manner oftener than once in three years.

Thoſe who have but a ſmall quantity of dung, uſually content themſelves with laying on about twenty loads upon an acre every year; this they lay only on the hills, either about November, or in the ſpring, which laſt ſome account the beſt time, when the hops are dreſſed, to cover them after they are cut; but if it be done at this time, the compoſt or dung ought to be very well rotted and fine.

Dreſſing. As to the dreſſing of the hops, when the hop-ground is dug in January or February, the earth about the hills, and very near them, ought to be taken away with a ſpade, that you may come the more conveniently at the ſtock to cut it.

About the end of February, if the hops were planted the ſpring before, or if the ground be weak, they ought to be dreſſed in dry weather; but elſe, if the ground be ſtrong and in perfection, the middle of March will be a good time; and the latter end of March, if it be apt to produce over-rank binds, or the beginning of April may be ſoon enough.

Then having with an iron picker cleared away all the earth out of the hills, ſo as to clear the ſtock to the principal roots, with a ſharp knife you muſt cut off all the ſhoots which grew up with the binds the laſt year; and alſo all the young ſuckers, that none be left to run

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in the alley, and weaken the hill. It will be proper to cut one part of the ſtock lower than the other, and alſo to cut that part low that was left higheſt the preceeding year. By purſuing this method you may expect to have ſtronger buds, and alſo keep the hill in good order.

In dreſſing thoſe hops that have been planted the year before, you ought to cut off both the dead tops and the young ſuckers which have ſprung up from the ſets, and alſo to cover the ſtocks with fine earth a finger's length in thickneſs.

The poling. About the middle of April the hops are to be poled, when the ſhoots begin to ſprout up; the poles muſt be ſet to the hills deep into the ground, with a ſquare iron picker or crow, that they may the better endure the winds; three poles are ſufficient for one hill. Theſe ſhould be placed as near the hill as may be, with their bending tops turned outwards from the hill, to prevent the binds from entangling; and a ſpace between two poles ought to be left open to the ſouth to admit the ſun-beams.

The poles ought to be in length 16 or 20 feet, more or leſs according as the ground is in ſtrength; and great care muſt be taken not to overpole a young or weak ground, for that will draw the ſtock too much, and weaken it. If a ground be overpoled, you are not to expect a good crop from it; for the branches which bear the hops will grow very little till the binds have over-reached the poles, which they cannot do when the poles are too long. Two ſmall poles are ſufficient for a ground that is young.

If you wait till the ſprouts or young buds are grown to the length of a foot, you will be able to make a better judgment where to place the largeſt poles; but if you ſtay till they are ſo long as to fall into the alleys, it will be injurious to them, becauſe they will entangle one with another, and will not claſp about the pole readily.

Mapple or aſhen poles are accounted the beſt for hops, on which they are thought to proſper beſt, becauſe of their warmth; or elſe becauſe the climbing of the hop is promoted by means of the roughneſs of the bark. But for durability, aſhen or willow poles are preferable; but cheſnut poles are the moſt durable of all.

If after the hops are grown up you find any of them have been under-poled, taller poles may be placed near thoſe that are too ſhort to receive the binds from them.

The tying. As to the tying of hops, the buds that do not claſp of themſelves to the neareſt pole when they are grown to three or four feet high, muſt be guided to it by the hand, turning them to the ſun, whoſe courſe they will always follow. They muſt be bound with withered ruſhes, but not ſo cloſe as to hinder them from climbing up the pole.

This you muſt continue to do till all the poles are furniſhed with binds, of which two or three are enough for a pole; and all the ſprouts and binds that you have no occaſion for, are to be plucked up; but if the ground be young, then none of theſe uſeleſs binds ſhould be plucked up, but ſhould be wrapt up together in the middle of the hill.

When the binds are grown beyond the reach of your hands, if they forſake the poles, you ſhould make uſe of a ſtand-ladder in tying them up.

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Towards the latter end of May, when you have made an end of tying them, the ground muſt have the ſummer dreſſing: this is done by caſting up with the ſpade ſome fine earth into every hill; and a month after this is done, you muſt hoe the alleys with a Dutch hoe, and make the hills up to a convenient bigneſs.

Gathering. About the middle of July hops begin to blow, and will be ready to gather about Bartholomew Tide. A judgment may be made of their ripeneſs by their ſtrong ſcent, their hardneſs, and the browniſh colour of their ſeed.

When by theſe tokens they appear to be ripe, they muſt be picked with all the expedition poſſible; for if at this time, a ſtorm of wind ſhould come, it would do them great damage by breaking the branches, and bruiſing and diſcolouring the hops; and it is very well known that the hops being picked green and bright, will ſell for a third part more than thoſe which are diſcoloured and brown.

The moſt convenient way of picking them is into a long ſquare frame of wood, called a *bin*, with a cloth hanging on tenter-hooks within it, to receive the hops as they are picked.

The frame is compoſed of four pieces of wood joined together, ſupported by four legs, with a prop at each end to bear up another long piece of wood placed at a convenient height over the middle of the bin; this ſerves to lay the poles upon which they are to be picked.

This bin is commonly eight feet long, and three feet broad; two poles may be laid on it at a time, and ſix or eight perſons may work at it, three or four on each ſide.

It will be beſt to begin to pick the hops on the eaſt or north ſide of your ground, if you can do it conveniently; this will prevent the ſouth weſt wind from breaking into the garden.

Having made choice of a plot of the ground containing 11 hills ſquare, place the bin upon the hill which is in the centre, having five hills on each ſide; and when theſe hills are picked, remove the bin into another piece of ground of the ſame extent, and ſo proceed till the whole hop-ground is finiſhed.

When the poles are drawn up to be picked, you muſt take great care not to cut the binds too near the hills, eſpecially when the hops are green, becauſe it will make the ſap to flow exceſſively.

The hops muſt be picked very clean, *i. e.* free from leaves and ſtalks; and, as there ſhall be occaſion, two or three times in a day the bin muſt be emptied into a hop-bag made of coarſe linen cloth, and carried immediately to the oaſt or kiln in order to be dried; for if they ſhould be long in the bin or bag, they will be apt to heat and be diſcoloured.

If the weather be hot, there ſhould no more poles be drawn than can be picked in an hour, and they ſhould be gathered in fair weather, if it can be, and when the hops are dry; this will ſave ſome expence in firing, and preſerve their colour better when they are dried.

The crop of hops being thus beſtowed, you are to take care of the poles againſt another year, which are beſt to be laid up in a ſhed, having firſt ſtripped off the haulm from them; but if you have not that conveniency,

ency, ſet up three poles in the form of a triangle, or ſix poles (as you pleaſe) wide at bottom; and having ſet them into the ground, with an iron picker, and bound them together at the top, ſet the reſt of your poles about them; and being thus diſpoſed, none but thoſe on the outſide will be ſubject to the injuries of the weather, for all the inner poles will be kept dry, unleſs at the top; whereas, if they were on the ground, they would receive more damage in a fortnight than by their ſtanding all the reſt of the year.

Drying. The beſt method of drying hops is with charcoal on an oaſt or kiln, covered with hair-cloth, of the ſame form and faſhion that is uſed for drying malt. There is no need to give any particular directions for making theſe, ſince every carpenter or bricklayer in thoſe countries where hops grow, or malt is made, knows how to build them.

The kiln ought to be ſquare, and may be of 10, 12, 14, or 16 feet over at the top, where the hops are laid, as your plantation requires, and your room will allow. There ought to be a due proportion between the height and breadth of the kiln and the beguels of the ſteddle where the fire is kept, *viz.* if the kiln be 12 feet ſquare on the top, it ought to be nine feet high from the fire, and the ſteddle ought to be ſix feet and a half ſquare, and ſo proportionable in other dimenſions.

The hops muſt be ſpread even upon the oaſt a foot thick or more, if the depth of the curb will allow it; but care is to be taken not to overload the oaſt if the hops be green or wet.

The oaſt ought to be firſt warmed with a fire before the hops are laid on, and then an even ſteady fire muſt be kept under them; it muſt not be too fierce at firſt, leſt it ſcorch the hops, nor muſt it be ſuffered to ſink or ſlacken, but rather be increaſed till the hops be nearly dried, leſt the moiſture or ſweat which the fire has raiſed fall back or diſcolour them. When they have lain about nine hours they muſt be turned, and in two or three hours more they may be taken off the oaſt. It may be known when they are well dried by the brittleneſs of the ſtalks and the eaſy falling off of the hop leaves.

It is found by experience that the turning of hops, though it be after the moſt eaſy and beſt manner, is not only an injury or waſte to the hops, but alſo an expence of fuel and time, becauſe they require as much fuel and as long a time to dry a ſmall quantity, by turning them, as a large one. Now this may be prevented by having a cover (to be let down and raiſed at pleaſure) to the upper bed whereon the hops lie. This cover may alſo be tinned, by nailing ſingle tin plates over the face of it; ſo that when the hops begin to dry, and are ready to burn, *i. e.* when the greateſt part of their moiſture is evaporated, then the cover may be let down within a foot or leſs of the hops (like a reverberatory), which will reflect the heat upon them, ſo that the top will ſoon be as dry as the lowermoſt, and every hop be equally dried.

Bagging. As ſoon as the hops are taken off the kiln, lay them in a room for three weeks or a month to cool, give, and toughen; for if they are bagged immediately they will powder, but if they lie a while (and the longer they lie the better, provided they be covered cloſe with blankets to ſecure them from the air) they may be bagged with more ſafety, as not being liable to be broken to powder in treading; and this will make them bear treading the better, and the harder they are trodden the better they will keep.

The common method of bagging is as follows: they have a hole made in an upper floor, either round or ſquare, large enough to receive a hop bag, which conſiſts of four ells and a half of ell-wide cloth, and alſo contains ordinarily two hundred and a half of hops; they tie a handful of hops in each lower corner of the bag to ſerve as handles to it; and they faſten the mouth of the bag, ſo placed that the hoop may reſt upon the edges of the hole.

Then he that is to tread the hops down into the bag, treads the hops on every ſide, another perſon continually putting them in as he treads them till the bag is full; which being well filled and trodden, they unrip the faſtening of the bag to the hoops, and let it down, and cloſe up the mouth of the bag, tying up a handful of hops in each corner of the mouth, as was done in the lower part.

Hops being thus packed, if they have been well dried, and laid up in a dry place, will keep good ſeveral years; but care muſt be taken that they be neither deſtroyed nor ſpoiled by the mice making their neſts in them.

Produce. The charge of an acre of hop-ground in moſt parts of England where hops are cultivated, is computed thus: three pounds for the huſbandry, four pounds for the wear of the poles, five pounds for picking and drying, one pound ten ſhillings for dung, one pound for rent, though in ſome places they pay four or five pounds an acre yearly for the rent of the land, and ten ſhillings for tythe; in all L. 15 a year. The hop-planters in England reckon that they have but a moderate return, when the produce of an acre of hops does not ſell for more than L. 30. They frequently have fifty, ſixty, eighty, or a hundred pounds; and in a time of general ſcarcity conſiderably more: ſo that, upon the whole, if the total charge of an acre of hops is computed at fifteen pounds a year, and its average produce at thirty pounds, the clear profit from an acre will be fifteen pounds a year. But the plantation of hops has lately ſo much increaſed, and the average produce ſo much exceeded the conſumption, that hops have been with many planters rather a loſing than a very profitable article.

Uſes. In the ſpring-time, while the bud is yet tender, the tops of the plant being cut off, and boiled, are ate like aſparagus, and found very wholeſome, and effectual to looſen the body; the heads and tendrils are good to purify the blood in the ſcurvy, and moſt cutaneous diſeaſes; decoctions of the flowers, and ſyrups thereof, are of uſe againſt peſtilential fevers; Juleps and apozems are alſo prepared with hops for hypochondriacal and hyſterical affections, and to promote the menſes.

A pillow ſtuffed with hops and laid under the head, is ſaid to procure ſleep in fevers attended with a delirium. But the principal uſe of hops is in the brewery for the preſervation of malt liquors; which by the ſuperaddition of this balſamic, aperient, and diuretic bitter, become leſs viſcid, leſs apt to turn ſour, more detergent, more diſpoſed to paſs off by urine, and in general more ſalubrious. They are ſaid to contain an agreeable odoriferous principle, which promotes the vinous fermentation. When ſlightly boiled or infuſed in warm water, they increaſe its ſpirituoſity.

Laws relating to Hops. By 9 Anne, cap. 121. an additional duty of 3d a pound is laid on all hops imported, over and above all other duties; and hops landed before entry and payment of duty, or without warrant for landing, ſhall be forfeited, and burnt; the ſhip alſo ſhall be forfeited, and the perſon concerned in importing or landing ſhall forfeit 5 l. a hundred weight. 7 Geo. II. cap. 19. By 9 Anne, cap. 12. there ſhall be paid a duty of 1d. for every pound of hops grown in Great Britain, and made fit for uſe, within ſix months after they are cured and bagged; and hop-grounds are required to be entered on pain of 40 s. an acre. Places of curing and keeping are alſo to be entered, on pain of 50 l. which may be viſited by an officer at any time without obſtruction, under the penalty of 20 l. All hops ſhall, within ſix weeks after gathering, be brought to ſuch places to be cured and bagged, on pain of 5 s. a pound. The re-bagging of foreign hops in Britiſh bagging for ſale or exportation, incurs a forfeiture of 10 l. a hundred weight; and defrauding the king of his duty by uſing twice or oftener the ſame bag, with the officer's mark upon it, is liable to a penalty of 40 l. The removal of hops before they have been bagged and weighed, incurs a penalty of 50 l. Concealment of hops ſubjects to the forfeiture of 20 l. and the concealed hops; and any perſon who ſhall privately convey away any hops, with intent to defraud the king and owner, ſhall forfeit 5 s. a pound. And the duties are required to be paid within ſix months after curing, bagging, and weighing, on pain of double duty, two-thirds to the king, and one-third to the informer. No common brewer, &c. ſhall uſe any bitter ingredient inſtead of hops, on pain of 20 l. Hops which have paid the duty may be exported to Ireland; but by 6 Geo. II. cap. 11. there ſhall be no drawback; and by 7 Geo. II. cap. 19. no foreign hops ſhall be landed in Ireland. Notice of bagging and weighing ſhall be ſent in writing to the officer, on pain of 50 l. 6 Geo. cap. 21. And by 14 Geo. III. cap. 68. the officer ſhall, on pain of 5 l. weigh the bags or pockets, and mark on them the true weight or tare, the planter's name, and place of abode, and the date of the year in which ſuch hops were grown; and the altering or forging, or obliterating ſuch mark, incurs a forfeiture of 10 l.—The owners of hops ſhall keep their oaſts, &c. juſt weights and ſcales, and permit the officer to uſe them on pain of 20 l. 6. Geo. cap. 21. And by 10 Geo. III. cap. 44. a penalty of 100 l. is inflicted for falſe ſcales and weights. The owners are allowed to uſe caſks inſtead of bags, under the ſame regulations. 6 Geo. cap. 21. If any perſon ſhall mix with hops any drug to alter the colour or ſcent, he ſhall forfeit 5 l. a hundred weight. If any perſon ſhall unlawfully and maliciouſly cut hop binds growing on poles in any plantation, he ſhall be guilty of felony without benefit of clergy. 6. Geo. II. cap. 37. By a late act, five *per cent.* is added to the duties on hops.

HOPE (Dr John), profeſſor of botany in the univerſity of Edinburgh, was born at Edinburgh on the 10th of May 1725. He was the ſon of Mr Robert Hope a reſpectable ſurgeon, whoſe father, Lord Rankeiler, made a diſtinguiſhed figure as one of the ſenators of the college of Juſtice in the kingdom of Scotland. By his mother he was deſcended from the ancient family of Glaſs of Sauchie in Stirlingſhire. After finiſhing the uſual courſe of ſchool education, he entered to the univerſity of Edinburgh; and having, as it were, an hereditary predilection for the healing art, his attention was ſoon particularly directed to that branch of ſcience. Having finiſhed his academical education at Edinburgh, he viſited other medical ſchools; and upon his return to his native country, he obtained the degree of Doctor of Medicine from the univerſity of Glaſgow in the beginning of the year 1750. A few months after that, he was admitted a member of the royal college of phyſicians in Edinburgh, and entered upon the practice of medicine in that city. After he had continued about ten years in practice, diſcharging the duties of his profeſſion with a degree of judgment, attention, and humanity, which did him great honour; by the death of Dr Alſton the botanical chair in the univerſity became vacant; when Dr Hope, by a commiſſion from his ſovereign, dated the 13th of April 1761, was appointed king's botaniſt for Scotland and ſuperintendant of the royal garden at Edinburgh. A few weeks after this he was elected by the town-council of Edinburgh as the ſucceſſor of Dr Alſton in the profeſſorſhips both of botany and materia medica; and thus he became one of the members of the faculty of medicine in the univerſity. After he had continued for about ſix years to give regular courſes of lectures on theſe ſubjects, with no leſs credit to himſelf than benefit to his hearers, teaching the one branch during the ſummer, and the other during the winter months, he found that his health was conſiderably impaired; which induced him to form the reſolution of reſigning the materia medica, and of afterwards ſolely confining his labours as a teacher of his favourite ſcience of botany. This reſolution he carried into effect in the year 1768; and by a new commiſſion from his majeſty, dated the 8th of May, he was nominated regius profeſſor of medicine and botany in the univerſity, and had the offices of king's botaniſt and ſuperintendant of the royal garden conferred upon him for life, which till that time had been always granted during pleaſure only.

Dr Hope's predeceſſor, although a learned and worthy man, could never obtain ſufficient public funds for the eſtabliſhment of a proper botanical garden at Edinburgh; and from the ſituation as well as the extent of the garden at that time, joined to the ſmallneſs of its conſervatories for plants, it could boaſt of no riches in the way of exotics. The only field for improvement, therefore, to the botanical ſtudent, was the environs of Edinburgh, to which it muſt indeed be allowed that nature has been uncommonly liberal, in affording a very great variety of indegenous vegetables. In this ſituation, the eſtabliſhment of a new garden naturally ſuggeſted itſelf as a grand and important object; and it was accompliſhed by the zeal and induſtry of Dr Hope, aided by the munificence of his preſent majeſty. The firſt aſſiſtance given to the undertaking was under the adminiſtration of Lord Bute; and afterwards, under that of the duke of Portland, a permanent fund for the ſupport of the botanical garden at this place was eſtabliſhed, which may render it not inferior to any in Europe. Dr Hope's unwearied exertions in procuring for the garden the vegetable productions of every climate, could not be exceeded. His endeavours were conſtantly directed in adding not to the ſhow; but to the riches of the garden; and they were employed with ſuch ſucceſs, that in a very ſhort time the intelligent botaniſt might gratify his curioſity, in contemplating the rareſt plants of every country which has yet been explored. Nor were his induſtrious exertions more aſſiduouſly beſtowed in forming and enriching the garden, than in cheriſhing and promoting a zeal for botanical ſtudies. From but a very ſmall number of lectures, which was all that his predeceſſor ever gave, he gradually prolonged the courſe till it became as complete as any one delivered at this place; and during all this extended courſe, he taught in ſuch a manner, as clearly demonſtrated a degree of ardour and enthuſiaſm in himſelf, which could hardly fail to inſpire ſimilar emotions in others. But even ſuch precept and ſuch example were not the only means he employed for directing the attention of the induſtrious, the ingenious, and laudably ambitious ſtudent, to this branch of ſcience. By beſtowing, entirely at his own expence, an annual gold medal, as a teſtimony of ſuperior merit, he gave a ſpur to exertion, from which the toils of ſtudy were alleviated by the love of fame, and the labours of induſtry converted into the pleaſures of emulation.

Dr Hope married the daughter of Dr Stevenſon an eminent phyſician in Edinburgh; by whom he had four ſons and one daughter. He died in November 1786. He was a member not only of the Royal Society of London, but alſo of ſeveral foreign ſocieties; and at the time of his death he held the diſtinguiſhed office of preſident of the royal college of phyſicians. Dr Hope, with whom it was a principal object to make botany ſubſervient to the acts more immediately uſeful to life, and particularly to medicine, was one of the firſt who, in conjunction with the late Sir Alexander Dick, turned his attention to the practical cultivation of rhubarb in Britain; and he demonſtrated the facility with which it might be multiplied. He lived to ſee it cultivated in ſuch abundance, that the Britiſh market was no longer under any neceſſity of depending upon foreign climates for this valuable and once expenſive medicine; alſo he has ſhown that the *aſafetida* plant, by proper attention, not only bears the viciſſitudes of the climate, but grows in ſuch a vigorous and healthful ſtate as to be fully impregnated with its active gum. There is therefore reaſon to hope, that by the exertions of future induſtry, the ſhop of the apothecary may be ſupplied with this article alſo from his own garden. Beſides being the author of ſome papers in the Philoſophical Tranſactions, particularly two reſpecting the uſeful plants juſt mentioned, Dr Hope had in contemplation a more extenſive botanical work, on which he had beſtowed much ſtudy and reflection. It was his wiſh to increaſe thoſe advantages which reſult from the very ingenious and uſeful artificial arrangements of Linnæus, by conjoining it with a ſyſtem of vegetables diſtributed according to their great natural orders. For this purpoſe, no inconſiderable part of that time which he could ſpare from other unavoidable engagements was employed in attempts to improve and perfect the natural method in the arrangement of vegetables. In this work he had made very conſiderable progreſs; and it muſt be the ſubject of ſincere regret to every lover of botany, if from the event of his death the public ſhall be for ever deprived of thoſe fruits of his labours.

Hope, in ethics, is the deſire of ſome good, attended with a belief of the poſſibility at leaſt, of obtaining it, and enlightened with joy, greater or leſs, according to the greater or leſs probability of our poſſeſſing the object of our hope. Alexander, preparing for his Aſian expedition, diſtributed his hereditary dominions among his friends; allotting to ſome villages, to others boroughs, to others cities; and being aſked what he had reſerved for himſelf, replied, Hope.

Good-Hope. See *Good-Hope.*

HOPEA, in botany: A genus of the polyandria order, belonging to the polydelphia claſs of plants. The calyx is quinquefid, ſuperior; the corolla pentapetalous; the ſtamina are many and coalited into five pencils; there is one ſtyle; the fruit is a plum with a trilocular kernel. There is only one ſpecies, the tinctora, a native of Carolina.

HOPKINS (Ezekiel), biſhop of Derry in Ireland, was the ſon of an obſcure clergyman in Devonſhire; and was for ſome time a choriſter of Magdalen college, Oxford, and uſher of the adjoining ſchool. He was afterwards a Preſbyterian miniſter, and was extolled as an excellent preacher. John, lord Roberts, happening to hear him preach, was ſo pleaſed with his perſon, his diſcourſe, and his manner, that he retained him as his chaplain when he was ſent in quality of lord lieutenant into Ireland, and preferred him to the deanery of Raphoe; and on his being recalled, ſo ſtrongly recommended him to his ſucceſſor, that he was ſoon preferred to the biſhopric of Raphoe, whence he was tranſlated to Derry. During the war under the earl of Tyrconnel at the revolution, he withdrew into England; and was choſen miniſter of St Mary, Aldermanbury, in London, where he died in 1690. His ſermons, his expoſition of the ten commandments, and that of the Lord's prayer, are much eſteemed. His works were printed together in 1710, folio. He was the father of Mr Charles Hopkins, ſeveral of whoſe poetical pieces are in Dryden's Miſcellanies.

HOPLITES, Hoplitæ (formed of οπλον *armour*), in antiquity, were ſuch of the candidates at the Olympic and other ſacred games as ran races in armour.

One of the fineſt pieces of the famous Parrhaſius was a painting which repreſented two hoplites; the one running, and ſeeming to ſweat large drops; the other laying his arms down, as quite ſpent and out of breath.

HOPLITODROMOS (formed of οπλον *armour*, and δρομω *I run*), in the ancient gymnaſtic ſports, a term applied to ſuch perſons as went through thoſe toilſome and robuſt exerciſes in complete armour; by which the exerciſe became much more violent, and the wearing of armour in the time of battle much more eaſy.

HOPLOMACHI, Οπλομαχοι (compoſed of οπλον *armour*, and μαχομαι *I fight*), in antiquity, were a ſpecies of gladiators who fought in armour; either completely armed from head to foot, or only with a caſk and cuiraſs.

HOPPER, a veſſel wherein ſeed-corn is carried at the time of ſowing.

The word is alſo uſed for the wooden trough in a mill, into which the corn is put to be ground.

HOR, a mountain, or mountainous tract of Arabia Petræa, ſituated in that circuit which the Iſraelites took to the ſouth and ſouth-eaſt of Edom in their way to the borders of Moab: on this mountain Aaron died. The inhabitants were called *Horites*. This tract was alſo called *Seir*, either from a native Horite, or from Eſau, by way of anticipation from his hairy habit of body; whoſe poſterity drove out the Horites.

HORÆ. See Hours.

HORÆA, in antiquity, ſolemn ſacrifices, conſiſting of fruits, &c. offered in ſpring, ſummer, autumn, and winter; that heaven might grant mild and temperate weather. Theſe, according to Meurſius, were offered to the goddeſſes called Ωραι, i. e. *Hours*, who were three in number, attended upon the Sun, preſided over the four ſeaſons of the year, and had divine worſhip paid them at Athens.

HORAPOLLO, or Horus Apollo, a grammarian of Panaplus in Egypt, according to Suidas, who firſt taught at Alexandria, and then at Conſtantinople under the reign of Theodoſius. There are extant under his name, two books on the hieroglyphics of the Egyptians; which Aldus firſt publiſhed in Greek in 1505, in folio; and they have often been publiſhed ſince, with a Latin verſion and notes. It is not certain, however, that the grammarian of Alexandria was the author of theſe books; they being rather thought to belong to another Horapollo of more ancient date: on which head, ſee *Fabricius' Bibliotheca Græca*.

HORATII, three Roman brothers, who, under the reign of Tullus Hoſtilius, fought againſt the three Curiatii, who belonged to the Albanian army. Two of the Horatii were firſt killed; but the third, by his addreſs, ſucceſſively ſlew the three Curiatii, and by this victory rendered the city of Alba ſubject to the Romans. See Rome.

HORATIUS, ſurnamed *Cocles* from his loſing an eye in combat, was nephew to the conſul Horatius Pulvillus, and deſcended from one of the three brothers who fought againſt the Curiatii. Porſenna, laying ſiege to Rome, drove the Romans from Janiculum; and purſued them to the wooden bridge over the Tiber, which joined the city to Janiculum. Largius, Herminius, and Horatius Cocles, ſuſtained the ſhock of the enemy on the bridge, and prevented their entering the city with the Romans; but Largius and Herminius having paſſed the bridge, Horatius Cocles was left alone, and repulſed the enemy till the bridge was broken under him: he then threw himſelf armed into the Tyber, ſwam acroſs the river, and entered Rome in triumph.

Horatius (Quintus Flaccus), the moſt excellent of the Latin poets of the lyric and ſatirical kind, and the moſt judicious critic in the reign of Auguſtus, was the grandſon of a freedman, and was born at Venuſium 64 B. C. He had the beſt maſters in Rome, after which he completed his education at Athens. Having taken up arms, he embraced the party of Brutus and Caſſius, but left his ſhield at the battle of Philippi. Some time after, he gave himſelf up entirely to the ſtudy of polite literature and poetry. His talents ſoon made him known to Auguſtus and Macænas, who had a particular eſteem for him, and loaded him with favours. Horace alſo contracted a ſtrict friendſhip with Agrippa, Pollio, Virgil, and all the other great men of his time. He lived without ambition, and led a tranquil and agreeable life with his friends; but was ſubject to a defluxion in his eyes. He died at the age of 57. There are ſtill extant his Odes, Epiſtles, Satires, and the art of poetry; of which there have been a great number of editions. The beſt are thoſe of the Louvre, in 1642, folio; of Paris, 1691, quarto; of Cambridge, 1699; and that with Bentley's emendations, printed at Cambridge in 1711.

HORD, in geography, is uſed for a company of wandering people, which have no ſettled habitation, but ſtroll about, dwelling in waggons or under tents, to be ready to ſhift as ſoon as the herbage, fruit, and the preſent province is eaten bare: ſuch are ſeveral tribes of the Tartars, particularly thoſe who inhabit beyond the Wolga, in the kingdom of Aſtracan and Bulgaria.

A hord conſiſts of 50 or 60 tents, ranged in a circle, and leaving an open place in the middle. The inhabitants in each hord uſually form a military company or troop, the eldeſt whereof is commonly the captain, and depends on the general or prince of the whole nation.

HORDEUM, barley, in botany: A genus of the digynia order, belonging to the triandria claſs of plants; and in the natural method ranking under the 4th order, *Gramina* The calyx is lateral, bivalved, uniflorous, and triple. The involucrum conſiſts of ſix leaves, and contains three flowers. There are eight ſpecies; only one of which, *viz.* the murinum, or wall-barley-graſs, is a native of Britain. The native place of the vulgar, or common barley cultivated in the fields, is not known. For the culture, &c. of common barley. ſee Agriculture, n° 139—146.

HORDICALIA, or Hordicidia, in antiquity, a religious feaſt held among the Romans, wherein they ſacrificed cattle big with young. This feaſt fell on April 15. on which day they ſacrificed 30 cows with calf to the goddeſs Tellus or the Earth; part of them were ſacrificed in the temple of Jupiter. The calves taken out of their bellies were burnt to aſhes at firſt by the pontifices, afterwards by the eldeſt of the veſtal virgins.

HOREB, or Oreb, a mountain of Arabia Petræa, contiguous to and on the ſouth ſide of mount Sinai; the ſcene of many miraculous appearances.

HORESTI (Tacitus), a people of Britain, beyond Solway Frith. Now *Eſkdale* (Camden).

HORITES, an ancient people, who at the beginning dwelt in the mountains of Seir beyond Jordan (Gen. xiv. 6.) They had princes, and were powerful, even before Eſau made a conqueſt of their country, (*id.* xxxvi. 20—30.) The Horites, the deſcendants of Seir, and the Edomites ſeem afterwards to have been confounded, and to have compoſed but one people (Deut. ii. 2. xxxiii. 2. and Judg. v. 4). They dwelt in Arabia Petræa, and Arabia Deſerta, to the ſouth-eaſt of the promiſed land. We find the Hebrew word חורים *Chorim*, which in the book of Geneſis is tranſlated *Horites*, to be uſed in an appellative ſenſe in ſeveral other paſſages of ſcripture, and to ſignify nobles, or great and powerful men (1 Kings xxi. 8, 11. and Neh. ii. 16. iv. 14. v. 7. vi. 17. vii. 5. xii. 17. Eccl. x. 17. Iſa. xxxiv. 12. Jer. xxvii. 20. xxxix. 6.); and it is very probable, that the Greeks derived from hence their *heroes* in like manner as they derived *Anax* "a king," from the ſons of Anak, the famous giant in Paleſtine.

HOREHOUND, Ballota, or *Stachys*, in botany. See Marrubium.

HORIZON, or Horison, in geography and aſtronomy, a great circle of the ſphere, dividing the world into two parts or hemiſpheres; the one upper and viſible, the other lower and hid. The word is pure Greek, ὁριζων, which literally ſignifies "bounding or terminating the ſight;" being formed of ὁριζω, *termino, definio*, "I bound, I limit;" whence it is alſo called *finitor*, finiſher." See Astronomy and Geography.

The horizon is either *rational* or *ſenſible*.

Rational, true, or *aſtronomical* Horizon, which is alſo called ſimply and abſolutely *the horizon*, is a great circle, whoſe plane paſſes through the centre of the earth, and whoſe poles are the zenith and nadir. It divides the ſphere into two equal parts or hemiſpheres.

Senſible, viſible, apparent Horizon, is a leſſer circle of the ſphere, which divides the viſible part of the ſphere, from the inviſible. Its poles, too, are the zenith and nadir: and conſequently the *ſenſible horizon* is parallel to the *rational*; and it is cut at right angles, and into two equal parts, by the verticals.—The *ſenſible horizon* is divided into *eaſtern* and *weſtern*. The *eaſtern* or *ortive* horizon, is that part of the horizon wherein the heavenly bodies riſe. The *weſtern* or *occidual* horizon, is that wherein the ſtars ſet. The altitude or elevation of any point of the ſphere, is an arch of a vertical circle intercepted between it and the ſenſible horizon.

By *ſenſible horizon* is alſo frequently meant a circle; which determines the ſegment of the ſurface of the earth, over which the eye can reach; called alſo the *phyſical horizon*. In this ſenſe we ſay, a ſpacious *horizon*, a narrow ſcanty *horizon*.

HORIZONTAL, ſomething that relates to the horizon, is taken in the horizon, or on a level with the horizon.—We ſay, a *horizontal plane, horizontal line*, &c.

Horizontal *Dial*, is that drawn on a parallel to the horizon: having its gnomon, or ſtyle, elevated according to the altitude of the pole of the place it is deſigned for. Horizontal dials are, of all others, the moſt ſimple and eaſy. The manner of deſcribing them, ſee under the article Dial.

Horizontal *Line*, in perſpective, is a right line drawn through the principal point, parallel to the horizon: or, it is the interſection of the horizontal and perſpective planes. See Perspective.

Horizontal *Plane*, is that which is parallel to the horizon of the place, or nothing inclined thereto.

The buſineſs of levelling is to find whether two points be in the horizontal plane; or how much the deviation is. See Levelling.

Horizontal *Plane*, in perſpective, is a plane parallel to the horizon, paſſing through the eye, and cutting the perſpective plane at right angles.

Horizontal *Projection*. See Geography, n° 66, 69.

Horizontal *Range*, or *Level Range*, of a piece of ordnance, is the line it deſcribes, when directed on a parallel to the horizon or horizontal line. See Gunnery, *paſſim*.

Horizontal *Moon*. See Astronomy, n° 374.

Horizontal *Speculum*. See Speculum.

HORMINUM, clary, in botany: A genus of the gymnoſpermia order, belonging to the didynamia claſs of plants; and in the natural method ranking under the 42d order, *Verticillatæ*. The calyx is campanulated, with four ſegments nearly equal, the fourth larger, and emarginated; the upper lip of the corolla concave. There are ſeveral ſpecies; the moſt remarkable of which is the verbenaceum, or common wild clary. It grows naturally on ſandy and gravelly ground in many parts of Britain. It has ſometimes been called *oculus Chriſti*, from the ſuppoſed virtues of its ſeeds in clearing the ſight, which it does by its viſcous covering; for when any thing happens to fall into the eye, if one of the ſeeds is put in at one corner, and the eyelid kept cloſe over it, moving the ſeed gently along the eye, whatever happens to be there will ſtick to it, and ſo be brought out. The virtues of this are ſuppoſed to be the ſame as thoſe of the garden clary, but not quite ſo powerful.

HORN, in phyſiology, a hard ſubſtance growing on the heads of divers animals, particularly the cloven-footed quadrupeds; and ſerving them both as weapons of offence and defence.

The horn of animals is of the ſame nature as their gelatinous matter; and is only that matter charged with a leſs quantity of water, and larger quantity of earth, and ſufficiently condenſed to have a firm and ſolid conſiſtence. By digeſting horn with water in Papin's digeſter, it may be entirely converted into jelly.

Horn is a perfectly animaliſed matter, and furniſhes in diſtillation the ſame principles as all animal matters; that is, at firſt a pure phlegm, with a degree of heat not exceeding that of boiling water; then a volatile alkaline ſpirit, which becomes more and more penetrating and ſtrong; a fetid, light, and thin oil; a concrete volatile ſalt, which forms ramifications upon the ſides of the receiver; much air; fetid oil, which becomes more and more black and thick; and laſtly, it leaves in the retort a conſiderable quantity of almoſt incombuſtible coal, from which, after its incineration, ſcarcely any fixed alkali can be obtained.

Animal oil, and particularly that which is drawn firſt in the diſtillation of horn, is ſuſceptible of acquiring great thinneſs and volatility by repeated diſtillations, and is then called *oil of dippel*.

The horns of ſtags, and of other animals of that kind, are the moſt proper to furniſh the animal oil to be rectified in the manner of dippel; becauſe they yield the largeſt quantity. Theſe horns alſo differ from the horns of other animals in this, that they contain a larger quantity of the ſame kind of earth which is in bones; hence they ſeem to poſſeſs an intermediate nature betwixt horns and bones.

Hart's-Horn. See *Hart's-Horn*.

Horns make a conſiderable article in the arts and manufactures. Bullocks horns, ſoftened by the fire, ſerve to make lanthorns, combs, knives, ink-horns, tobacco-boxes, &c.

Dyeing of Horn—Black is performed by ſteeping braſs in aqua-fortis till it be turned green: with this the horn is to be waſhed once or twice, and then put into a warmed decoction of logwood and water. Green is begun by boiling it, &c. in alum-water; then with verdigris, ammoniac, and white-wine vinegar; keeping it hot therein till ſufficiently green. Red is begun by boiling it in alum-water, and finiſhed by decoction in a liquor compounded of quick-lime ſteeped in rain water, ſtrained, and to every pint an ounce of Brazil-wood added. In this decoction the bone, &c. is to be boiled till ſufficiently red.

Dr Lewis informs us that horns receive a deep black ſtain from ſolution of ſilver. It ought to be diluted to ſuch a degree as not ſenſibly to corrode the ſubject; and applied two or three times, if neceſſary, at conſiderable intervals, the matter being expoſed as much as poſſible to the ſun, to haſten the appearance and deepening of the colour.

Dyeing or ſtaining Horn to imitate Tortoiſeſhell.—The horn to be dyed muſt be firſt preſſed into proper plates, ſcales, or other flat forms; and the following mixture prepared. Take of quick-lime two parts, and of litharge one part; temper them together to the conſiſtence of a ſoft paſte with ſoap-ley. Put this paſte over all the parts of the horn, except all ſuch as are proper to be left tranſparent, in order to give it a nearer reſemblance of the tortoiſe-ſhell. The horn muſt remain in this manner covered with the paſte till it be thoroughly dry; when, the paſte being bruſhed off, the horn will be found partly opaque and partly tranſparent, in the manner of tortoiſe-ſhell; and when put over a foil, of the kind of latten called *aſſidue*, will be ſcarcely diſtinguiſhable from it. It requires ſome degree of fancy and judgment to diſpoſe of the paſte in ſuch a manner as to form a variety of tranſparent parts, of different magnitudes and figures, to look like the effects of nature: and it will be an improvement to add ſemitranſparent parts; which may be done by mixing whiting with ſome of the paſte to weaken its operation in particular places; by which ſpots of a reddiſh brown will be produced, which if properly interſperſed, eſpecially on the edges of the dark parts, will greatly increaſe both the beauty of the work, and its ſimilitude with the red tortoiſe-ſhell.

Horn, is alſo a ſort of a muſical inſtrument of the wind kind; chiefly uſed in hunting, to animate and bring together the dogs and the hunters. The term anciently was, *wind a horn*, all horns being in thoſe times encompaſſed; but ſince ſtraight horns are come in faſhion, they ſay *blow a horn*, and ſometimes *ſound a horn*.—There are various leſſons on a horn; as the recheat, double recheat, royal recheat, running or farewell recheat, &c. See Recheat.

The *French horn* is no other than a wreathed or contorted trumpet. It labours under the ſame defects as the trumpet itſelf; but theſe have of late been ſo palliated, as to require no particular ſelection of keys for this inſtrument. In the beginning of the year 1773, a foreigner, named Spandau, played in a concert at the opera-houſe a concerto, part whereof was in the key of C, with the minor-third; in the performance of which all the intervals ſeemed to be as perfect as in any wind-inſtrument. This improvement was effected by putting his right-hand into the bottom or bell of the inſtrument, and attempering the ſounds by the application of his fingers to different parts of the tube.

The Hebrews made uſe of horns, formed of rams horns, to proclaim the jubilee; whence the name Jubilee.

Cape-Horn. See *Terra del Fuego*.

Horn-Beam, in botany. See Caprinus.

Horn-Bill, in ornithology. See Buceros.

Horn-Blend, is a black or green indurated bole or clay, conſiſting of ſcaly particles, which are diſtinguiſhable from thoſe of mica, by being leſs ſhining, thicker, and rectangular. It is generally found amongſt iron ores, and ſometimes intermixed with mica, forming a compact ſtone.

Human Horns. In Dr Charles Leigh's natural hiſtory of Lancaſhire, Cheſhire, and the Peak in Derbyſhire, England, is the print of a woman with two horns on her head. When ſhe was 28 years of age an excreſcence grew upon her head like a wen, which continued 30 years, and then grew into two horns. After four years ſhe caſt them, and in their place grew two others. After four years ſhe caſt theſe alſo; and the horns which were on her head in 1681 (the time when the account was written) were then looſe. Her picture and one of her horns are in Aſhmole's muſeum. In the univerſity library at Edinburgh is preſerved a horn which was cut from the head of Elizabeth Love, in the 50th year of her age. It grew three inches above the ear, and was growing ſeven years.

Horn Diſtemper, a diſeaſe incident to horned cattle, affecting the internal ſubſtance of the horn commonly called the pith, which it inſenſibly waſtes, and leaves the horn hollow. The pith is a ſpongy bone, the cells of which are filled with an unctuous matter. It is furniſhed with a great number of ſmall blood veſſels, is overſpread with a thin membrane, and appears to be united by ſutures with the bones of the head.—According to an account of this diſtemper, publiſhed by Dr Toifts in the Memoirs of the American Academy, vol. i. the ſaid ſpongy bone is ſometimes partly, and ſometimes entirely, waſted. The horn loſes its natural heat, and a degree of coldneſs is felt upon handling it. The diſtemper, however, is ſeldom ſuſpected without a particular acquaintance with the other ſymptoms, which are a dulneſs in the countenance of the beaſt, a ſluggiſhneſs in moving, a failure of appetite, an inclination to lie down, and, when accompanied with an inflammation of the brain, a giddineſs and frequent toſſing of the head. The limbs are ſometimes affected with ſtiffneſs, as in a rheumatiſm; in cows the milk often fails, the udder is hard, and in almoſt all caſes there is a ſudden waſting of the fleſh. As ſoon as the diſtemper is diſcovered, an opening into the diſeaſed horn ſhould be immediately made; which may be done with a gimlet of a moderate ſize, in ſuch a part of the horn as is moſt favourable for the diſcharge. It is recommended as moſt prudent to bore at firſt two or three inches above the head. If it is found hollow, and the gimlet paſſes through to the oppoſite ſide, and no blood diſcharges from the aperture, it may be beſt to bore ſtill lower, and as near the head as it ſhall be judged that the hollowneſs extends. This opening is affirmed to be a neceſſary meaſure, and often gives immediate relief. Care muſt be taken to keep it clear, as it is apt to be clogged by a thin fluid that gradually oozes out and fills up the paſſage. Some have practiſed ſawing off the horn; but, according to the beſt obſervations, it does not ſucceed better than boring. From the caſes Dr Tufts has ſeen, he is led to conclude that injections are in general unneceſſary; that, when the diſtemper is early diſcovered, no more is required than a proper opening into the horn, keeping it ſufficiently clear for the admiſſion of freſh air, the removal of the compreſſion, and the diſcharge of floating matter. But when the diſtemper has communicated its effects to the brain, ſo as to produce a high degree of inflammation, it is much to be doubted whether any method of cure will ſucceed.

Horn-Fiſh, *Gar-fiſh*, or *Sea-Needle*. See Esox.

Horn-Work, in fortification, an outwork compoſed of two demi-baſtions joined by a curtain. See Fortification.

HORNBY, a town of Lancaſhire in England, ſeated on a branch of the river Lune, and beautified with a handſome parochial chapel. The ruins of a decayed caſtle are ſtill to be ſeen here. W. Long. 2. 20. N. Lat. 54. 6.

HORN-castle, a town of Lincolnſhire in England. It had a caſtle, as the name imports; from the architecture of which, and the Roman coins that are ſometimes dug up here, it is thought to have been a camp or ſtation of the Romans. The town is well built, and is almoſt ſurrounded with water. It is a ſigniory of 13 lordſhips. In theſe lordſhips there are ſeveral chapels for the convenience of the inhabitants, who are at too great a diſtance from the mother-church, and pretty numerous. It has a market on Saturdays, and fairs in June and Auguſt.

HORNDON, a town in Eſſex, in England. It ſtands near a rivulet, that at a ſmall diſtance from hence falls into the Thames, which is there called the *Hope*. E. Long. 0. 30. N. Lat. 51. 20.

HORNECK (Dr Anthony), a learned and pious divine, was born at Baccharach, in the Lower Palatinate, in 1641. He ſtudied divinity under Dr Spanheim at Heidelberg; and afterwards coming to England, completed his ſtudies at Oxford and became vicar of Allhallows in that city. In 1665, he removed into the family of the Duke of Albemarle; and was tutor to his grace's ſon, then lord Torrington. The duke preſented him to the rectory of Doulton in Devonſhire, and procured for him a prebend in Exeter. He was afterwards choſen preacher of the Savoy. In 1693, he was collated to a prebend in Weſtminſter, and the ſame year admitted to a prebend in the cathedral of Wells. He publiſhed, 1. The great law of conſideration. 2. The happy aſcetick. 3. Delight and judgment. 4. The fire of the altar. 5. The exerciſe of prayer. 6. The crucified Jeſus. 7. Several ſermons, and other works. He died in 1696, and was interred in Weſtminſter abbey, where a monument is erected to his memory.

HORNERS, thoſe people whoſe buſineſs it is to prepare various utenſils of the horns of cattle. The horners were a very ancient and conſiderable fraternity in the city of London ſome hundred years ago. In the reign of Edward II. they complained to parliament, that by foreigners buying up the horns in England, they were in danger of being ruined, and this buſineſs loſt to the nation. For this reaſon was made the ſtatute 6 Edw. IV. by which the ſale of horns to foreigners (except ſuch as the ſaid horners refuſed) was prohibited; and the wardens had power granted them to ſearch all the markets in London and 24 miles round, and to inſpect Sturbridge and Ely fairs, to prevent ſuch practices, and to purchaſe horns at ſtated prices. But on plauſible pretences this law was repealed in the reign of James I. and thereupon the old evil revived. The horners again applied to parliament, and king Edward's ſtatute was renewed (excepting as to the inſpection of the fairs), and ſtill remains in force. The importation of unwrought horns into Britain is alſo prohibited. In 1750, there were exported to Holland 514,500 lantern-leaves, beſides powder flaſks. There was formerly a duty of 20 ſhillings a thouſand, under which in 1682 were exported 76,650; but in the reign of George I. this duty was taken off, and theſe and all other manufactures made of horns may be exported free. The preſent company of horners were incorporated January 12, 1638; and conſiſt of a maſter, two wardens, and nine aſſiſtants, without livery or hall. They have a warehouſe in Spitalfields, to which the horns are ſent as brought from town and country markets, and thence regularly divided, the widows and orphans of deceaſed members having equal ſhares.

HORNET, in zoology, a ſpecies of waſp. See Vespa.

HORNING, in Scots law, a writing iſſuing from the ſignet, in his majeſty's name, at the inſtance of a creditor againſt his debtor, commanding him to pay or perform within a certain time, under pain of being declared rebel, and by a caption put in priſon.

HORNIUS (George), profeſſor of hiſtory at Leyden, was born in the Palatinate, and died at Leyden in 1670. He was a little maniacal towards the end of his life; which diſorder was ſuppoſed to be occaſioned by the loſs of 6000 florins he had entruſted with an alchemiſt at the Hague. His works are, 1. *Hiſtoria Eccleſiaſtica ad an.* 1666. This has been well eſteemed. 2. *De Originibus Americanis*, 1652, 8vo. 3. *Geographia Vetus & Nova*. 4. *Orbis Politicus*. He was a man of vaſt reading, rather than great parts.

HORNSEY, a town in Yorkſhire, 188 miles from London. It is almoſt ſurrounded by a ſmall arm of the ſea; and the church having a high ſteeple, is a noted ſea-mark. Not many years ago there was a ſtreet here called *hornſey beck*, which was waſhed away by the ſea, except a houſe or two. E Long. 0. 6. N. Lat. 54. 0.

Hornsey, a town of Middleſex, five miles north of London. It is a long ſtraggling place, ſituated in a low valley, but extremely pleaſant, having the new river winding through it. Its church, of which Highgate is a hamlet, is ſuppoſed to be built with the ſtones that came from Lodge-Hill, the biſhop of London's hunting-ſeat in his park here; it having been his manor from the moſt ancient times. About a mile nearer this is a coppice of young trees, caller *hornſey-wood*, at the entrance of which is a public houſe, to which great numbers of perſons reſort from the city. This houſe being ſituated on the top of a hill, affords a delightful proſpect of the neighbouring country.

HORNPIPE, a common inſtrument of muſic in

Wales, conſiſting of a wooden pipe, with holes at ſtated diſtances, and a horn at each end; the one to collect the wind blown into it by the mouth, and the other to carry off the ſounds as modulated by the performer.

Hornpipe is alſo the name of an Engliſh air, probably derived from the above inſtrument. The meaſure of this air is triple time, with ſix crotchets in a bar; four of which are to be beat with the hand down and two up.

HOROLOGIUM, Ωρολογιον (compoſed of ωρα *hora*, "time, hour," and λογος "ſpeech, diſcourſe"), a common name among ancient writers for any inſtrument or machine for meaſuring the hours; (ſee Chronometer).—Such are our clocks, watches, ſun-dials, &c. See Clock, Watch, Dial, and Clepsydra.

Modern inventions, and gradual improvements, have given birth to ſome new terms that come properly under this head, and annexed new meanings to others totally different from what they had originally. All chronometers that announced the hour by ſtriking on a bell, were called *clocks*: thus, we read of pocket-clocks, though nothing could ſeem more abſurd than to ſuppoſe that a clock, according to the modern idea, ſhould be carried in the pocket. In like manner, all clocks that did not ſtrike the hour were called *watches*, or *time-pieces*; and the different parts of a ſtriking clock were diſtinguiſhed by the watch-part and the clock-part; the former meaning that part which meaſures the time, and the latter the part which proclaims the hours. In the report of Sir Iſaac Newton to the houſe of commons, *anno* 1713, relative to the longitude act, he ſtates the difficulties of aſcertaining the longitude by means of a watch: yet it is obvious, from ſeveral circumſtances, that his remarks were directly to be underſtood of a time-piece regulated by a pendulum; for his objections are founded on the known properties of the pendulum, ſome of which differ eſſentially from the properties of the balance and ſpring. It is alſo to be remembered, that all the attempts of Huygens of finding the longitude were by means of pendulum clocks that did not ſtrike the hours, and conſequently, according to the language of the times, were called *watches*. At this time ſuch machines for meaſuring time as are fixed in their places are called *clocks*, if they ſtrike the hour: if they do not ſtrike the hour, they are called *time-pieces*; and when conſtructed with more care, for a more accurate meaſure of time, they are called *regulators*. Some artiſts of late have affected to call ſuch watches as were conſtructed for aſtronomical and nautical obſervations by the name of *time-pieces*, probably to intimate that they poſſeſs the advantages of thoſe conſtructed with a pendulum.

Mr John Harriſon firſt gave the name of *time-keeper* to his watch, for the performance of which he received from parliament the ſum of L. 20,000. See Longitude.

For the account of the principles of this machine, ſee Time-keeper. And for the chief improvements that have been made for the more accurate meaſure of time, ſee Pallets, Pendulum, and Scapement.

HOROSCOPE, in aſtrology, the degree or point of the heavens ariſing above the eaſtern point of the horizon at any given time when a prediction is to be made of a future event; as, the fortune of a perſon then born, the ſucceſs of a deſign then laid, the weather, &c. The word is compoſed of ωρα *hora*, "hour," and the verb σκεπτομαι, *ſpecto, conſidero*, "I conſider."

They were formerly ſo infatuated with horoſcopes, that Albertus Magnus, Cardan, and others, are ſaid to have had the temerity to draw that of Jeſus Chriſt.

Horoscope is alſo uſed for a ſcheme or figure of the twelve houſes; i. e. the twelve ſigns of the zodiac, wherein is marked the diſpoſition of the heavens for any given time. Thus we ſay, to draw a horoſcope, conſtruct a horoſcope, &c. We call it, more particularly, *calculating a nativity*, when the life and fortune of a perſon are the ſubject of the prediction; for they draw horoſcopes of cities, great enterprizes, &c. See House.

HOROSCOPY. See Divination, nº 2.

HORREA, in Roman antiquity, were public magazines of corn and ſalt meat, out of which the ſoldiers were furniſhed on their march in the military roads of the empire. *Horrea* was alſo the name which they gave to their granaries.

HORROX (Jeremiah), an eminent Engliſh aſtronomer in the 17th century, was born at Texteth near Liverpool in Lancaſhire in 1619. He died, to the great loſs of that ſcience and of the world, in the 23d year of his age, after he had juſt finiſhed his *Venus in ſole viſa*; which, with ſome other works, were publiſhed by Dr Wallis, in quarto.

HORROR, ſtrictly ſignifies ſuch an exceſs of fear as makes a perſon tremble. See Fear, Fright, and Terror. In medicine, it denotes a ſhivering and ſhaking of the whole body, coming by fits. It is common at the beginning of all fevers, but is particularly remarkable in thoſe of the intermittent kind.

Horror of a Vacuum, was an imaginary principle among the ancient philoſophers, to which they aſcribed the aſcent of water in pumps, and other ſimilar phenomena, which are now known to be occaſioned by the weight of the air.

HORSE, in zoology. See the article Equus.

Horſes were very rare in Judæa till Solomon's time. Before him we find no horſemen mentioned in the armies of Iſrael. David having won a great battle againſt Hadadezer king of Shobah (2 Sam. viii. 4. 5.) took 1700 horſes, and lamed all belonging to the chariots of war, reſerving only 100 chariots. The judges and princes of Iſrael uſed generally to ride on mules or aſſes. After David's time, horſes were more common in the country of Judah, &c. Solomon is the firſt king of Judah who had a great number of horſes, and he kept them rather for pomp than for war; for we do not read that he made any military expeditions. He had, ſays the ſcripture (1 Kings iv. 16.) 40,000 ſtalls of horſes for his chariots, and 12,000 horſemen diſtributed in his fortified places (1 Kings x. 26.) He had his horſes from Egypt (*ibid.* ver. 28, 29.); and there was not a ſet which did not coſt him more than 600 ſhekels, which make of our money about 90l. ſterling. Moſes had forbidden the king of the Hebrews to keep a great number of horſes (Deut. xvii. 16.), leſt at any time he ſhould be inclined to carry the people back into Egypt.

We read in the ſecond book of Kings (xxiii. 17.), that Joſiah took away the horſes which the kings of Judah his predeceſſors had conſecrated to the ſun. We know

know the ſun was worſhipped over all the eaſt, and that the horſe, the ſwifteſt of tame beaſts, was conſecrated to this deity, who was repreſented as riding in a chariot drawn by the moſt beautiful and ſwifteſt horſes in the world, and performing every day his journey from eaſt to weſt, in order to communicate his light to mankind. Xenophon deſcribes a ſolemn ſacrifice of horſes, which was made with ceremony to the ſun; they were all the fineſt ſteeds, and were led with a white chariot, crowned, and conſecrated to the ſame god. We may believe that the horſes which Joſiah removed out of the court of the temple, were appointed for the like ſacrifices. The rabbins inform us, that theſe horſes were every morning put to the chariots dedicated to the ſun, whereof there is mention made in the ſame book; and that the king, or ſome of his officers, got up and rode to meet the ſun in its riſing, as far as from the eaſtern gate of the temple to the ſuburbs of Jeruſalem. Others are of opinion, that the horſes mentioned in the book of kings were of wood, ſtone, or metal, erected in the temple in honour of the ſun: Others, that they were horſes which none were permitted to ride or faſten to the yoke, but were free, and left to themſelves, like thoſe which Julius Cæſar let looſe and ſet at liberty after his paſſage of the Rubicon.

Horſes were uſed both amongſt the Greeks and Romans in war, but were not originally numerous; for as each horſeman provided his own horſe, few would be able to bear the expence. Horſes for a conſiderable time were managed by the voice alone, or by a ſwitch, without bridle, ſaddle, or ſtirrups. Their harneſs was ſkins of beaſts, or ſometimes cloth. Both horſes and men among the Greeks underwent a ſevere probation before their admiſſion into the cavalry. —Horſe-races were common amongſt the Greeks and Romans, and the place where they ran or breathed their courſers was called *hippodromus*.

Management of a HORSE *upon and after a Journey.* See that his ſhoes be not too ſtrait, or preſs his feet, but be exactly ſhaped; and let him be ſhod ſome days before you begin a journey, that they may be ſettled to his feet.

Obſerve that he is furniſhed with a bitt proper for him, and by no means too heavy, which may incline him to carry low, or to reſt upon the hand when he grows weary, which horſemen call *making uſe of his fifth leg*.

The mouth of the bitt ſhould reſt upon his bars about half a finger's breadth from his tuſhes, ſo as not to make him frumble his lips; the curb ſhould reſt in the hollow of his beard a little above the chin; and if it gall him, you muſt defend the place with a piece of buff or other ſoft leather.

Take notice that the ſaddle do not reſt upon his withers, reins, or back-bone, and that one part of it do not preſs his back more than another.

Some riders gall a horſe's ſides below the ſaddle with their ſtirrup-leathers, eſpecially if he be lean; to hinder it, you ſhould fix leather ſtraps between the points of the fore and hind-bows of the ſaddle, and make the ſtirrup leather paſs over them.

Begin your journey with ſhort marches, eſpecially if your horſe has not been exerciſed for a long time: ſuffer him to ſtale as often as you find him inclined; and not only ſo, but invite him to it: but do not excite your mares to ſtale, becauſe their vigour will be thereby diminiſhed.

It is adviſable to ride very ſoftly; for a quarter or half an hour before you arrive at the inn, that the horſe not being too warm, nor out of breath, when put into the ſtable, you may unbridle him: but if your buſineſs obliges you to put on ſharply, you muſt then (the weather being warm) let him be walked in a man's hand, that he may cool by degrees; otherwiſe, if it be very cold, let him be covered with cloths, and walked up and down in ſome place free from wind; but in caſe you have not the conveniency of a ſheltered walk, ſtable him forthwith, and let his whole body be rubbed and dried with ſtraw.

Although ſome people will have their horſes legs rubbed down with ſtraw as ſoon as they are brought into the ſtable, thinking to ſupple them by that means; yet it is one of the greateſt errors that can be committed, and produces no other effects than to draw down into the legs thoſe humours that are always ſtirred up by the fatigue of the journey: not that the rubbing of horſe's legs is to be diſallowed; on the contrary, we highly approve of it, only would not have it done at their firſt arrival, but when they are perfectly cooled.

Being come to your inn, as ſoon as your horſe is partly dried, and ceaſes to beat in the flanks, let him be unbridled, his bit waſhed, cleanſed, and wiped, and let him eat his hay at pleaſure.

If your horſe be very dry, and you have not given him water on the road, give him oats waſhed in good mild ale.

The duſt and ſand will ſometimes ſo dry the tongues and mouths of horſes, that they loſe their appetites: in ſuch caſe, give them bran well moiſtened with water to cool and refreſh their mouths; or waſh their mouths and tongues with a wet ſponge, to oblige them to eat.

The foregoing directions are to be obſerved after moderate riding; but if you have rode exceſſively hard, unſaddle your horſe, and ſcrape off the ſweat with a ſweating-knife, or ſcraper, holding it with both hands, and going always with the hair; then rub his head and ears with a large hair-cloth, wipe him alſo between the fore-legs and hind legs; in the mean while, his body ſhould be rubbed all over with ſtraw, eſpecially under his belly and beneath the ſaddle, till he is thoroughly dry.

That done, ſet on the ſaddle again, cover him; and if you have a warm place, let him be gently led up and down in it, for a quarter of an hour; but if not, let him dry where he ſtands.

Or you may unſaddle him immediately; ſcrape off the ſweat; let the oſtler take a little vinegar in his mouth, and ſquirt it into the horſe's; then rub his head, between the fore and hind-legs, and his whole body, till he is pretty dry: let him not drink till thoroughly cool and has eaten a few oats; for many, by drinking too ſoon, have been ſpoiled. Set the ſaddle in the ſun or by a fire, in order to dry the pannels.

When horſes are arrived at an inn, a man ſhould, before they are unbridled, lift up their feet, to ſee whether they want any of their ſhoes, or if thoſe they have do not reſt upon their ſides; afterwards he ſhould pick and clear them of the earth and gravel, which may be got betwixt their ſhoes and ſoles.

If you water them abroad, upon their return from the river cauſe their feet to be ſtopped with cow-dung, which will eaſe the pain therein; and if it be in the evening, let the dung continue in their feet all night, to keep them ſoft and in good condition: but if your horſe have brittle feet, it will be requiſite to anoint the fore-feet at the on-ſetting of the hoofs, with butter, oil, or hog's greaſe, before you water him in the morning, and in dry weather they ſhould be alſo greaſed at noon.

Many horſes, as ſoon as unbridled, inſtead of eating, lay themſelves down to reſt, by reaſon of the great pain they have in their feet, ſo that a man is apt to think them ſick; but if he looks to their eyes, he will ſee they are lively and good; and if he offers them meat as they are lying, they will eat it very willingly; yet if he handles their feet, he will find them extremely hot, which diſcovers their ſuffering in that part. You muſt therefore ſee if their ſhoes do not reſt upon their ſoles, which is ſomewhat difficult to be certainly known without unſhoeing them; but if you take off their ſhoes, then look to the inſide of them, and you may perceive that thoſe parts which reſt upon the ſoles are more ſmooth and ſhining than the others: in this caſe you are to pare their feet in thoſe parts, and fix on their ſhoes again, anointing the hoofs, and ſtopping the ſoles with ſcalding hot black pitch or tar.

After a long day's journey, at night feel your horſe's back, if he be pinched, galled, or ſwelled (if you do not immediately diſcover it, perhaps you may after ſupper) there is nothing better than to rub it with good brandy and the white of an egg. If the galls are between the legs, uſe the ſame remedy; but if the oſtler rubs him well between the legs, he will ſeldom be galled in that part.

In order to preſerve horſes after travel, take theſe few uſeful inſtructions. When you are arrived from a journey, immediately draw the two heel-nails of the fore-feet; and, if it be a large ſhoe, then four: two or three days after, you may blood him in the neck, and feed him for 10 or 12 days only with wet bran, without giving him any oats; but keep him well littered.

The reaſon why you are to draw the heel-nails, is becauſe the heels are apt to ſwell, and if they are not thus eaſed, the ſhoes would preſs and ſtraiten them too much: it is alſo adviſable to ſtop them with cow-dung for a while; but do not take the ſhoes off, nor pare the feet, becauſe the humours are drawn down by that means.

The following bath will be very ſerviceable for preſerving your horſe's legs. Take the dung of a cow or ox and make it thin with vinegar, ſo as to be of the the conſiſtence of thick broth; and having added a handful of ſmall ſalt, rub his fore-legs from the knees, and the hind-legs from the gambrels, chafing them well with and againſt the hair, that the remedy may ſink in and ſtick to thoſe parts, that they may be all covered over with it. Thus leave the horſe till morning, not wetting his legs, but giving him his water that evening in a pail; next morning lead him to the river, or waſh his legs in well-water, which is very good, and will keep them from ſwelling.

Thoſe perſons, who, to recover their horſes feet, make a hole in them, which they fill with moiſtened cow-dung, and keep it in their fore-feet during the ſpace of a month, do very ill; becauſe, though the continual moiſture that iſſues from the dung occaſions the growing of the hoof, yet it dries and ſhrinks it ſo exceſſively when out of that place, that it ſplits and breaks like glaſs, and the foot immediately ſtraitens. For it is certain, that cow-dung (contrary to the opinion of many people) ſpoils a horſe's hoof: it does indeed moiſten the ſole; but it dries up the hoof, which is of a different nature from it. In order, therefore, to recover a horſe's feet, inſtead of cow-dung, fill a hole with blue wet clay, and make him keep his fore-feet in it for a month.

Moſt horſes that are fatigued, or over-rid, and made lean by long journeys, have their flanks altered without being purſy, eſpecially vigorous horſes that have worked too violently.

There is no better method to recover them, than to give each of them in the morning half a pound of honey very well mingled with ſcalded bran; and when they readily eat the half pound, give them the next time a whole one, and afterwards two pounds, every day continuing this courſe till your horſes are empty, and purge kindly with it; but as ſoon as you perceive that their purging ceaſes, forbear to give them any more honey.

You may adminiſter powder of liquorice in the ſcalded bran for a conſiderable time; and to cool their blood, it will not be improper to let them have three or four gliſters.

In caſe the horſe be very lean, it is expedient to give him ſome wet bran, over and above his proportion of oats; and graſs is alſo extraordinary beneficial, if he be not purſy.

It it be a mare, put her to a horſe; and if ſhe never had a foal before, it will enlarge her belly.

Sometimes exceſſive feeding may do horſes more harm than good, by rendering them ſubject to the farcy. You ſhould therefore be cautious in giving them too great a quantity at a time, and take a little blood from them now and then.

When a horſe begins to drink water heartily, it is a certain ſign that he will recover in a ſhort time. As to the method of giving him water during a journey, obſerve the following rules:

All the while you are upon a journey, let your horſe drink of the firſt good water you come to, after ſeven o'clock in the morning if it be in ſummer time, and after nine or ten in winter.

That is accounted good water which is neither too quick and piercing, nor too muddy and ſtinking.

This is to be done, unleſs you would have him gallop a long time after drinking; for if ſo, you muſt forbear.

Though it is the cuſtom of England to run and gallop horſes after drinking, which we call *watering-courſes*, to bring them (as they ſay) into wind; yet ſays M. de Solleyſel, it is the moſt pernicious practice that can be imagined for horſes, by which many are rendered purſy.

While a horſe is drinking, draw up his head five or ſix times, making him move a little between every draught; and notwithſtanding he be warm, and ſweat very much, yet if he is not quite out of breath, and you have ſtill four or five miles to ride, he will be better after drinking a little, than if he had drank none at all: it is true, indeed, that if the horſe is very warm, you ſhould, at coming out of the water, redouble your pace, to make him go at a gentle trot, to warm the water in his belly.

You ought to let him drink after this manner during the whole time of your journey; becauſe, if when you happen to bait he be hot or ſweaty, you muſt not let him drink for a long time, as it would endanger his life; and when his bridle is taken off, his exceſſive thirſt will hinder him from eating, ſo that he will not offer to touch his meat for an hour or two, which perhaps your occaſions will not allow you for a baiting time, and not to have any food will render him unfit for travel.

If you meet with any ford before you come to your inn, ride the horſe through it two or three times, but not up to the belly: this will only cleanſe his legs; but the coldneſs of the water will bind up the humours, and prevent them from deſcending.

If your horſe has been very warm, and you have not had the conveniency of watering him upon the road, he will, when unbridled, eat but very little; therefore he ſhould have his oats given him waſhed in ale or beer, or only ſome of them, if you intend to feed him again after he has drank.

Some are of opinion, that horſes are often ſpoiled by giving them oats before their water; becauſe they ſay the water makes the oats paſs too ſoon, and out of the ſtomach undigeſted. But M. de Solleyſel affirms, that though it be the common cuſtom not to do it till after, yet it is proper to feed with oats both before and after, eſpecially if the horſe be warm, and has been hard rode; for they will be a great deal the better for it, and in no danger of becoming ſick.

Buffon's Nat. Hiſt.

Breeding of Horses. When the ſtallion is choſen, and all the mares intended for him are collected together, there muſt be another ſtone-horſe, to diſcover which of the mares are in heat; and, at the ſame time, contribute to enflame them. All the mares are to be brought ſucceſſively to this ſtone-horſe; which ſhould alſo be inflamed, and ſuffered frequently to neigh. As he is for leaping every one, ſuch as are not in heat keep him off, whilſt thoſe which are ſo ſuffer him to approach them. But inſtead of being allowed to ſatisfy his impulſe, he muſt be led away, and the real ſtallion ſubſtituted in his ſtead. This trial is neceſſary for aſcertaining the true time of the mare's heat, eſpecially of thoſe which have not yet had a colt; for with regard to ſuch as have recently foaled, the heat uſually begins nine days after their delivery; and on that very day they may be led to the ſtallion to be covered; and nine days after, by the experiment abovementioned, it may be known whether they are ſtill in heat. If they are, they muſt be covered a ſecond time; and thus ſucceſſively every ninth day while their heat continues: for when they are impregnated, their heat abates, and in a few days ceaſes entirely.

But that every thing may be done eaſily and conveniently, and at the ſame time with ſucceſs and advantage, great attention, expence, and precaution are requiſite. The ſtud muſt be fixed in a good ſoil, and in a ſuitable place, proportioned to the uumber of mares and ſtallions intended to be uſed. This ſpot muſt be divided into ſeveral parts, incloſed with rails or ditches well fenced; in the part where the paſture is the richeſt, the mares in fold, and thoſe with colts by their ſides, are to be kept. Thoſe which are not impregnated, or have not yet been covered, are to be ſeparated, and kept with the fillies in another cloſe, where the paſture is leſs rich, that they may not grow too fat, which would obſtruct the progreſs of generation. Laſtly, the young ſtone-colts or geldings, are to be kept in the drieſt part of the fields, and where the ground is moſt unequal; that by running over the uneven ſurface, they may acquire a freedom in the motion of their legs and ſhoulders. This cloſe, where the ſtone colts are kept, muſt be very carefully ſeparated from the others, leſt the young horſes break their bounds, and enervate themſelves with the mares. If the tract be ſo large as to allow of dividing each of theſe cloſes into two parts, for putting oxen and horſes into them alternately, the paſture will laſt much longer than if continually eaten by horſes; the ox improving the fertility, whereas the horſe leſſens it. In each of theſe cloſes ſhould be a pond; ſtanding water being better than running, which often gripes them: and if there are any trees in the ground, they ſhould be left ſtanding, their ſhade being very agreeable to the horſes in great heats; but all ſtems or ſtumps ſhould be grubbed up, and all holes levelled, to prevent accidents. In theſe paſtures your horſes ſhould feed during the ſummer; but in the winter the mares ſhould be kept in the ſtable and fed with hay. The colts alſo muſt be houſed, and never ſuffered to feed abroad in winter, except in very fine weather. Stallions that ſtand in the ſtable ſhould be fed more with ſtraw than hay; and moderately exerciſed till covering time, which generally laſts from the beginning of April to the end of June. But during this ſeaſon they ſhould have no other exerciſe, and be plentifully fed, but with the ſame food as uſual. Before the ſtallion is brought to the mare, he ſhould be dreſſed, as that will greatly increaſe his ardour. The mare muſt alſo be curried, and have no ſhoes on her hind feet, ſome of them being tickliſh, and will kick the ſtallion. A perſon holds the mare by the halter, and two others lead the ſtallion by long reins; when he is in a proper ſituation, another aſſiſtant carefully directs the yard, pulling aſide the mare's tail, as a ſingle hair might hurt him dangerouſly. It ſometimes happens that the ſtallion does not complete the work of generation, coming from the mare without making any injection: it ſhould therefore be attentively obſerved, whether, in the laſt moments of the copulation, the dock of the ſtallion's tail has a vibrating motion; for ſuch a motion always accompanies the emiſſion of the ſeminal lymph. If he has performed the act, he muſt on no conſideration be ſuffered to repeat it; but be led away directly to the ſtable, and there kept two days. For, however able a good ſtallion may be of covering every day during the three months, it is much better to let him be led to a mare only every other day: his produce will be greater, and he himſelf leſs exhauſted. During the firſt ſeven days, let four different mares be ſucceſſively brought to him; and the ninth day let the firſt be again brought, and ſo ſucceſſively while they continue in heat: but as ſoon as the heat of any one is over, a freſh mare is to be put in her place, and covered in her turn every nine days; and as ſeveral retain even at the firſt, ſecond, or third time, it is computed that a ſtallion, by ſuch management, may, during the three months, cover 15 or 18 mares, and beget 10 or 12 colts. Theſe animals have a very large quantity of the ſeminal lymph; ſo that a conſiderable portion of it is ſhed during the emiſſion. In the mares likewiſe is an emiſſion, or rather diſtillation of the ſeminal lymph, during the whole time they are horſing; ejecting a viſcid whitiſh lymph, called the *heats*, which ceaſe on conception. This ichor the Greeks called *hippomanes;* and pretended that philtres might be made of it, one remarkable effect of which was, to render a horſe frantic with luſt. This hippomanes is very different from that found in the ſecundines of the foal, which M. Daubenton firſt diſcovered, and has ſo accurately deſcribed its nature, origin, and ſituation. The ejection of this liquor is the moſt certain ſign of the mare's heat; but it is alſo known by the inflation of the lower part of the vulva, by her frequent neighings, and attempts to get to the horſes. After being covered, nothing more is requiſite than to lead her away to the field. The firſt foal of a mare is never ſo ſtrongly formed as the ſucceeding; ſo that care ſhould be taken to procure for her, the firſt time, a larger ſtallion, that the defect of the growth may be compenſated by the largeneſs of the ſize. Particular regard ſhould alſo be had to the difference or congruity of the faſhion of the ſtallion and the mare, in order to correct the faults of the one by the perfections of the other: eſpecially never to make any diſproportionate copulations, as of a ſmall horſe with a large mare, or a large horſe with a ſmall mare; as the produce of ſuch copulation would be ſmall, or badly proportioned. It is by gradations that we muſt endeavour to arrive at natural beauty: for inſtance, to give to a mare a little too clumſy, a well-made horſe and finely ſhaped; to a ſmall mare, a horſe a little higher; to a mare which is faulty in her fore-hand, a horſe with an elegant head and noble cheſt, &c.

It has been obſerved, that horſes fed in dry and light grounds, produce temperate, ſwift, and vigorous foals, with muſcular legs and a hard hoof; while the ſame bred in marſhes and moiſt paſtures have produced foals with a large heavy head, a thick carcaſe, clumſy legs, bad hoofs, and broad feet. Theſe differences proceed from the air and food, which is eaſily underſtood; but what is more difficult to be accounted for, and ſtill more eſſential than what we have hitherto obſerved, is, to be continually croſſing the breed to prevent a degeneracy.

In coupling of horſes, the colour and ſize ſhould be ſuited to each other, the ſhape contraſted, and the breed croſſed by an oppoſition of climates: but horſes and mares foaled in the ſame ſtud ſhould never be joined. Theſe are eſſential articles; but there are others which ſhould by no means be neglected: as that no ſhort-docked mares be ſuffered in a ſtud, becauſe from their being unable to keep off the flies, they are much more tormented by them than others which have a long ſweeping tail; and their continual agitations from the ſtings of theſe inſects, occaſions a diminution in the quantity of their milk, and has a great influence on the conſtitution and ſize of the colt, which will be vigorous in proportion as its dam is a good nurſe. Care muſt alſo be taken, that the ſtud mares be ſuch as have been always brought up in paſtures, and never over-worked. Mares which have always been brought up in the ſtable on dry food, and afterwards turned to graſs, do not breed at firſt: ſome time is required for accuſtoming them to this new aliment.

Though the uſual ſeaſon for the heat of mares be from the beginning of April to the end of June, yet it is not uncommon to find ſome among a large number that are in heat before that time: but it is adviſable to let this heat paſs over without giving them to the ſtallion, becauſe they would foal in winter; and the colts, beſides the inclemency of the ſeaſon, would have bad milk for their nouriſhment. Again, if the mares are not in heat till after the end of June, they ſhould not be covered that ſeaſon; becauſe the colts being foaled in ſummer, have not time for acquiring ſtrength ſufficient to repel the injuries of the following winter.

Many, inſtead of bringing the ſtallion to the mare, turn him looſe into the cloſe, where all the mares are brought together; and there leave him too chooſe ſuch as will ſtand to him. This is a very advantageous method for the mares: they will always take horſe more certainly than in the other; but the ſtallion, in ſix weeks, will do himſelf more damage than in ſeveral years by moderate exerciſe, conducted in the manner we have already mentioned.

When the mares are pregnant, and their belly begins to ſwell, they muſt be ſeparated from thoſe that are not, leſt they hurt them. They uſually go 11 months and ſome days, and foal ſtanding; whereas moſt other quadrupeds lie down. Thoſe that cannot foal without great difficulty, muſt be aſſiſted; the foal muſt be placed in a proper ſituation; and ſometimes, if dead, drawn out with cords. The head of the colt uſually preſents itſelf firſt, as in all other animals: at its coming out of the matrix, it breaks the ſecundines or integuments that incloſe it, which is accompanied with a great flux of the lymph contained in them; and at the ſame time one or more ſolid lumps are diſcharged, formed by the ſediment of the inſpiſſated liquor of the allantoides. This lump, which the ancients called the *hippomanes of the colt*, is ſo far from being, as they imagined, a maſs of fleſh adhering to the head of the colt, that it is ſeparated from it by a membrane called *amnios*. As ſoon as the colt is fallen, the mare licks it, but without touching the hippomanes; which points out another error of the ancients, who affirmed that ſhe inſtantly devours it.

The general cuſtom is to have a mare covered nine days after her foaling, that no time may be loſt; but it is certain, that the mare having, by this means, both her preſent and future foal to nouriſh, her ability is divided, and ſhe cannot ſupply both ſo largely as ſhe might one only. It would therefore be better, in order to have excellent horſes, to let the mares be covered only every other year; they would laſt the longer, and bring foals more certainly: for, in common ſtuds, it is ſo far from being true that all mares which have been covered bring colts every year, that it is conſidered as a fortunate circumſtance if half or at moſt two thirds of them foal.

Mares when pregnant, will admit of copulation: but it is never attended with any ſuperfœtation. They uſually breed till they are 14 or 15 years of age; and the moſt vigorous till they are above 18. Stallions, when well managed, will engender till the age of 20, and even beyond; but it muſt be obſerved, that ſuch horſes as are ſooneſt made ſtallions, are alſo the ſooneſt incapable of generation: thus the large horſes, which acquire ſtrength ſooner than the ſlender, and are therefore often uſed as ſtallions as ſoon as they are four years old, are incapable of generation before they are ſixteen.

Gelding of Horses. See GELDING.

Rearing of Horses. See COLT.

Draught-Horse, in farming, a ſort of coarſe-made horſe deſtined for the ſervice of the cart or plough. In the choice of theſe horſes for what is called the *ſlow draught*, they are to be choſen of an ordinary height; for otherwiſe, when put into the cart, one draws unequally with the other. The draught-horſe ſhould be large bodied and ſtrong loined, and of ſuch a diſpoſition, as rather to be too dull than too briſk, and rather to crave the whip than to draw more than is needful. Mares are the fitteſt for this uſe for the farmer, as they will be kept cheap, and not only do the work, but be kept breeding, and give a yearly increaſe of a foal. They ſhould have a good head, neck, breaſt, and ſhoulders; for the reſt of the ſhape, it is not of much conſequence. Only, for breeding, the mare ſhould have a large belly; for the more room a foal has in the dam, the better proportioned it will be. Draught-horſes ſhould be always kept to that employ. Some put them to the ſaddle on occaſion, but it does them great harm, alters their pace, and ſpoils them for labour. The draught horſe ought to have a large broad head, becauſe horſes of this ſhaped head are leſs ſubject than others to diſeaſes of the eyes. The ears ſhould be ſmall, ſtraight and upright; the noſtrils large and open, that he may breathe with the more freedom. A horſe with a full and bold eye always promiſes well. On the other hand, a ſunk eye and an elevated brow are bad ſigns. The horſe is eſteemed fitteſt for this purpoſe alſo, that has a large and round buttock, which neither ſinks down nor cuts. He muſt have a firm and ſtrong tail, and the dock muſt be thick and well furniſhed with hair, and placed neither very high nor very low. The legs ſhould be rather flat and broad than round: the roundneſs of the leg being a fault in a horſe deſtined to labour that will ſoon ruin him. As to the hinder legs, the thighs ſhould be fleſhy and long, and the whole muſcle which ſhows itſelf on the outſide of the thigh ſhould be large and very thick. No country can bring a parallel to the ſize and ſtrength of the Britiſh horſes deſtined for the draught. In London there are inſtances of ſingle horſes that are able to draw on a plain, for a ſmall ſpace, the weight of three tons, and which can with eaſe, and for continuance, draw half that weight. The pack horſes of Yorkſhire uſually carry a burden of 420 lb. over the higheſt hills of the north, as well as the moſt level roads: but the moſt remarkable proof of the ſtrength of the Britiſh horſes is derived from that of the mill horſes; ſome of which will at one load carry 13 meaſures, which at a moderate computation of 70 lb. each, will amount to 910 lb. Nothing is ſo eſſential to the health of theſe ſerviceable creatures as cleanlineſs; if they are fed ever ſo well, and not kept clean, they will be ſubject to numerous diſeaſes.

The ſervant who has the care of them ought to be up very early, and to clean the racks and mangers from all filth. The currying of them ought to be carefully performed every morning, but not in the ſtable, for the duſt to fall upon the other horſes, as it is too often done. After the horſes are duſted, they ſhould daily twiſt a whiſp of ſtraw hard up, and wetting it in water, rub the legs, ſhoulders and body with it. Many of the diſeaſes of draught-horſes, which are not owing to naſtineſs, are owing to bad water; ſuch as are too raw, too muddy, or too cold, being all improper. If there be any running ſtream in the neighbourhood, they ſhould always be led to that to water every day in ſummer, but in winter, well-water is warmiſh, and is better for them. If there be a neceſſity of giving them well-water in ſummer, it muſt be drawn up ſome hours before the time, and expoſed to the ſun-beams in tubs or troughs; marſh-water or that of lowland ditches is worſt of all. When the labouring horſe has drank his water, he ſhould have his oats given him, and theſe ſhould be carefully ſifted, and the manger duſted firſt. It is a common practice, as ſoon as a horſe is come in from his work, to rub down his legs with a hard whiſp of hay; but the beſt judges of horſes abſolutely condemn this, and obſerve, that this rubbing of the legs after hard labour brings down humours into them, and makes them ſtiff.

The rubbing itſelf is wholeſome, but the doing it when the creature is hot is the miſchief; while a horſe is in a ſweat it is a great relief and refreſhment to him to have his body rubbed down, but when he is cold is the proper time to rub his legs. The racks are to be well ſupplied with hay, and the horſes ſhould be left to reſt and eat, about two hours, and then led to water; after this their oats ſhould be given them, and they ſhould then go to work again.

In the evening, when the labour of the day is over, the firſt thing to be done is to examine the feet, and ſee if any thing is amiſs about the ſhoes, and what earth or gravel is lodged in the foot, between the ſhoe and the ſole, is to be picked out and ſome freſh cow-dung put in its place, which will cool and refreſh the part.

A very material thing for the preſervation of all ſorts of cattle, but of none ſo much as draught-horſes, is freſh and clean litter.

Horse-Cheſnut. See ÆSCULUS, and HIPPOCASTANUM.

Horse-Guards. See GUARDS.

Horse-Hunting. See HUNTER.

Horse Meaſure is a rod of box to ſlide out of a cane, with a ſquare at the end, being divided into hands and inches to meaſure the height of horſes.

Horse-Muſcle. See MYTULUS.

Race-Horse. See RACING.

Horse-Radiſh. See COCHLEARIA.

Horse-Shoe, a cover or defence for the ſole of a horſe's foot. See FARRIERY, p. 167.

Horse-ſhoe head, a diſeaſe in infants, wherein the ſutures of the ſkull are too open, or too great a vacuity is left between them; ſo that the aperture ſhall not be totally cloſed up, or the cranium in that part not be ſo hard as the reſt for ſome years after. This openneſs is found to be increaſed upon the child's catching cold. When the diſeaſe continues long, it is reputed a ſign of weakneſs and ſhort life. In this caſe, it is uſual to rub the head now and then with warm rum or brandy, mixed with the white of an egg and palm-oil. Sometimes the diſorder ariſes from a collection of waters in the head called an *hydrocephalus*.

Stone-HORSE. See STALLION.

HORSE-Tail. See EQUISETUM and EPHEDRA.

HORSE-Vetch. See HIPPOCREPIS.

War-HORSE. The proper rules for chooſing a horſe for ſervice in war, are theſe: he ſhould be tall in ſtature, with a comely head, and out-ſwelling forehead. His eye ſhould be bright and ſparkling, and the white part of it covered by the eye brow. The ears ſhould be ſmall, thin, ſhort, and pricking; or if long, they ſhould be moveable with eaſe, and well carried. The neck ſhould be deep, and the breaſt large and ſwelling. The ribs bending, the chine broad and ſtraight, and the buttocks round and full. The tail ſhould be high and broad, neither too thick nor too thin; the thigh ſwelling; the leg broad and flat, and the paſtern ſhort. When ſuch a horſe is choſen, he muſt be kept high during the time of his teaching, that he may be full of vigour. His food muſt be ſweet hay, and good clean oats, or two parts of oats and one part of beans or peaſe, well dried and hardened. The quantity ſhould be half a peck in the morning, and the ſame quantity at noon and in the evening. Upon his reſting days he is to be dreſſed between five and ſix in the morning, and watered at ſeven or eight. In the evening he is to be dreſſed at four, and watered about five, and he muſt always have provender given him after watering; he muſt be littered about eight, and then muſt have food given him for all night. The night before he is ridden all his hay is to be taken away about nine o'clcok, and he muſt have a handful or two of oats about four in the morning: when he has eaten theſe, he is to be turned upon the ſnaffle, and rubbed very well with dry cloths; then ſaddled, and made fit for his exerciſe. When he has performed this, he is to be brought ſweating into the ſtable, and rubbed down with dry wiſps. When this has been done, the ſaddle is to be taken off, and he is to be rubbed down with dry cloths; the houſing cloth is then to be laid on; and the ſaddle being again laid on, he is to be walked gently about till thoroughly cool. After this, he muſt ſtand without meat two or three hours, then he muſt be fed; and in the afternoon he is to be rubbed and dreſſed as before, and watered in the uſual manner.

HORSE Worm, in natural hiſtory, a ſpecies of fly-worm called alſo *bott*, produced of eggs depoſited by a two-winged fly of the ſhape and ſize of the humble bee in the inteſtines of horſes. See BOTTS.

River-HORSE, in zoology. See HIPPOPOTAMUS.

HORSE is alſo uſed in the military language, to expreſs the cavalry; or the body of ſoldiers who ſerve on horſeback.

The horſe includes horſe guards, horſe grenadiers, and troopers. Dragoons are alſo frequently comprehended under this name, though they fight on foot: of theſe there are now 18 Britiſh regiments; beſides three regiments of dragoon-guards raiſed in 1685. See GRANADIER, DRAGOONS, and GUARDS.

Maſter of the HORSE. See MASTER.

Light HORSE, are regiments of cavalry, mounted on light ſwift horſes, whoſe men are ſmall and lightly accoutred. They were firſt raiſed in 1757. The denomination aroſe hence, that anciently they were lightly armed, in compariſon of the royal guards, which were armed at all points.

Hungarian HORSE. See HUSSARS.

HORSE is alſo a term uſed in various arts and manufactories, for ſomething that helps to ſuſtain their work from the ground, for the more commodious working at it.

The horſe uſed by tanners and ſkinners, alſo called the *leg*, is a piece of wood cut hollow and roundiſh, four or five feet long, and placed aſlope; upon which they pare their ſkins to get off the dirt, hair, fleſh, &c.

HORSE is alſo uſed in carpentry, for a piece of wood jointed acroſs two other perpendicular ones, to ſuſtain the boards, planks, &c. which make bridges over ſmall rivers; and on divers other occaſions.

HORSE, in ſea language, is the name of a rope reaching from the middle of a yard to its extremity, or what is called the *yard-arm*, and depending about two or three feet under the yard, for the ſailors to tread upon whilſt they are looſing, reefing, or furling the ſails, rigging out the ſtudding-ſail booms, &c. In order, therefore, to keep the horſe more parallel to the yard, it is uſually ſuſpended to it at proper diſtances, by certain ropes called ſtirrups, which hang about two feet under the yard, having an eye in their lower ends through which the horſe paſſes.

HORSE is alſo a thick rope, extended in a perpendicular direction near the fore or after-ſide of a maſt, for the purpoſe of hoiſting or extending ſome ſail upon it. When it is fixed before a maſt, it is calculated for the uſe of a ſail called the *ſquare-ſail*, whoſe yard being attached to the horſe, by means of a traveller or bull's eye, which ſlides up and down occaſionally, is retained in a ſteady poſition; either when the ſail is ſet, or whilſt it is hoiſting or lowering. When the horſe is placed abaft or behind a maſt, it is intended for the try-ſail of a ſnow, and is accordingly very rarely fixed in this poſition, except in thoſe ſloops of war which occaſionally aſſume the form of ſnows, in order to deceive the enemy.

HORSE is alſo a cant name introduced into the management of lotteries, for the chance or benefit of a ticket or number for one or more days, upon condition, if it be drawn a prize within the time covenanted for, of returning to the ſeller an undrawn ticket.—To determine the value of a horſe; multiply the amount of the prizes in the lottery by the time the horſe is hired for; and from the product ſubtract the amount of the number of prizes by the value of an undrawn ticket into the time of the horſe: the remainder being divided by the number of tickets into the whole time of drawing, the quotient is the value of the horſe. See LOTTERY.

HORSE-Bread. See BREAD.

HORSE-Dung, in gardening, is of great uſe in making hot-beds, for the raiſing of all ſorts of early crops; as ſallading, cucumbers, melons, aſparagus, &c. for which purpoſes no other kinds of dung will do ſo well. Horſe dung ferments the ſtrongeſt; and if mixed with litter and ſea-coal aſhes in a due proportion, will continue its heat much longer than any other ſort of dung whatſoever: and afterwards, when rotted, becomes an excellent manure for moſt ſorts of land; more eſpecially for ſuch as are of a cold nature. For ſtiff clayey land, horſe-dung mixed with ſea-coal aſhes, and the cleanſing of ſtreets, will cauſe the parts to ſeparate much ſooner than any other compoſt: ſo that where it can be obtained in plenty, it is always to be recommended for ſuch lands. See DUNG.

Animated HORSE-*Hairs*, a term uſed to expreſs a ſort of long and ſlender water-worm, of a blackiſh colour, and ſo much reſembling a horſe-hair, that it is generally by the vulgar ſuppoſed to be the hair fallen from a horſe's mane into the water as he drinks, and there animated by ſome ſtrange power. Dr Liſter has at large confuted this abſurd opinion in the Philoſophical Tranſactions.

HORSE-*Hair Worms*. See AMPHISBÆNA.

HORSE-*Hoeing Huſbandry*. See AGRICULTURE, nº 218.

HORSEMANSHIP;

Or, The Art of Riding, and of Training and Managing, HORSES.

Breaking of Horſes.

SECT. I. *The Method of preparing Horſes to be mounted.*

THOUGH all horſes are generally bought at an age when they have already been backed, they ſhould be begun and prepared for the rider with the ſame care, gentleneſs, and caution, as if they had never been handled or backed, in order to prevent accidents, which might elſe ariſe from ſkittiſhneſs or other cauſes: and as it is proper that they ſhould be taught the figure of the ground they are to go upon when they are at firſt mounted, they ſhould be previouſly trotted in a *longe* on circles, without any one upon them.

Earl of Pembroke's Directions.

The manner of doing this is as follows: Put an eaſy *caveſſon* upon the horſe's noſe, and make him go forwards round you, ſtanding quiet and holding the *longe*; and let another man, if you find it neceſſary, follow him with a whip. All this muſt be done very gently, and but a little at a time: for more horſes are ſpoiled by overmuch work, than by any other treatment whatever; and that by very contrary effects; for ſometimes it drives them into vice, madneſs, and deſpair, and often ſtupifies and totally diſpirits them.

The firſt obedience required in a horſe is going forwards; till he perform this duty freely, never even think of making him rein back, which would inevitably make him reſtive: as ſoon as he goes forwards readily, ſtop and careſs him. You muſt remember in this, and likewiſe in every other exerciſe, to uſe him to go equally well to the right and left; and when he obeys, careſs him and diſmiſs him immediately. If a horſe that is very young takes fright and ſtands ſtill, lead on another horſe before him, which probably will induce him inſtantly to follow. Put a ſnaffle in his mouth; and when he goes freely, ſaddle him, girting him at firſt very looſe. Let the cord, which you hold, be long and looſe; but not ſo much ſo as to endanger the horſe's entangling his legs in it. It muſt be obſerved, that ſmall circles, in the beginning, would conſtrain the horſe too much, and put him upon defending himſelf. No bend muſt be required at firſt: never ſuffer him to gallop falſe; but whenever he attempts it, ſtop him without delay, and then ſet him off afreſh. If he gallops of his own accord, and true, permit him to continue it; but if he does it not voluntarily, do not demand it of him at firſt. Should he fly and jump, ſhake the cord gently upon his noſe without jerking it, and he will fall into his trot again. If he ſtands ſtill, plunges, or rears, let the man who holds the whip make a noiſe with it; but never touch him till it be abſolutely neceſſary to make him go on. When you change hands, ſtop and careſs him, and entice him by fair means to come up to you: for by preſenting yourſelf, as ſome do, on a ſudden before horſes, and frightening them to the other ſide, you run a great riſk of giving them a ſhyneſs. If he keeps his head too low, ſhake the *caveſſon* to make him raiſe it; and in whatever the horſe does, whether he walks, trots, or gallops, let it be a conſtant rule, that the motion be determined, and really ſuch as is intended, without the leaſt ſhuffling, pacing, or any other irregular gait.

Of placing the Rider.

SECT. II. *The Method of placing the Rider and rendering him firm on Horſeback, with ſome occaſional Inſtructions for Riders and the Horſes.*

IT is neceſſary that the greateſt attention, and the ſame gentleneſs that is uſed in teaching the horſes, be obſerved likewiſe in teaching the rider, eſpecially at the beginning. Every method and art muſt be practiſed to create and preſerve, both in man and horſe, all poſſible feeling and ſenſibility; contrary to the uſage of moſt riding-maſters, who ſeem induſtriouſly to labour at aboliſhing theſe principles both in the one and the other. As ſo many eſſential points depend upon the manner in which a man is at firſt placed on horſeback, it ought to be conſidered and attended to with the ſtricteſt care and exactneſs.

The abſurdity of putting a man, who perhaps has never before been upon a horſe, on a rough trotting horſe, on which he is obliged to ſtick with all the force of his arms and legs, is too obvious to need mentioning. This rough work, all at once, is plainly as detrimental at firſt, as it is excellent afterwards in proper time. No man can be either well or firmly ſeated on horſeback, unleſs he be maſter of the balance of his body, quite unconſtrained, with a full poſſeſſion of himſelf, and at his eaſe; none of which requiſites can he enjoy, if his attention be otherwiſe engaged; as it muſt wholly be in a raw, unſuppled, and unpre-

Of placing the Rider.

prepared lad, who is put at once upon a rough horſe; in ſuch a diſtreſsful ſtate, he is forced to keep himſelf on at any rate, by holding to the bridle (at the expence of the ſenſibility both of his own hand and the horſe's mouth), and by clinging with his legs, in danger of his life, and to the certain depravation of a right feeling in the horſe.

The firſt time a man is put on horſeback, it ought to be upon a very gentle one. He never ſhould be made to trot, till he is quite eaſy in the walk; nor gallop, till he is able to trot properly. The ſame muſt be obſerved in regard to horſes; they ſhould never be made to trot till they are obedient, and their mouths are well formed on a walk, nor to be made to gallop, till the ſame be effected on a trot. When he is arrived at ſuch a degree of firmneſs in his ſeat, the more he trots, and the more he rides rough horſes, the better. This is not only the beſt method, but alſo the eaſieſt and the ſhorteſt: by it a man is ſoon made ſufficiently an horſeman for a ſoldier: but by the other deteſtable methods that are commonly uſed, a man, inſtead of improving, contracts all ſorts of bad habits, and rides worſe and worſe every day; the horſe too becomes daily more and more unfit for uſe. In proceeding according to the manner propoſed, a man is rendered firm and eaſy upon the horſe, both his own and the horſe's ſenſibility is preſerved, and each in a ſituation fit to receive and practiſe all leſſons effectually.

Among the various methods that are uſed of placing people on horſeback, few are directed by reaſon. Before you let the man mount, teach him to know, and always to examine, if the curb be well placed, (that is, when the horſe has a bit in his mouth, which at firſt he ſhould not; but only a ſnaffle, till the rider is firm in his ſeat, and the horſe alſo ſomewhat taught): likewiſe to know if the noſe-band be properly tight; the throat-band looſiſh; and the mouth-piece neither too high nor too low in the horſe's mouth, but rightly put ſo as not to wrinkle the ſkin nor to hang lax; the girts drawn moderately, but not too tight; and the crupper and the breaſt-plate properly adjuſted. A very good and careful hand may venture on a bit at firſt, and ſucceed with it full as well as by beginning with a ſnaffle alone; only colts, indeed, it is better, in all ſchools whatſoever, to avoid any preſſure on the bars juſt at firſt, which a curb, though ever ſo delicately uſed, muſt in ſome degree occaſion. When the bridle, &c. have been well looked to, let the man approach the horſe gently near the ſhoulder; then taking the reins and an handful of the mane in his left hand, let him put his foot ſoftly in the left ſtirrup, by pulling it towards him, leſt he touch the horſe with his toe; then raiſing himſelf up, let him reſt a moment on it, with his body upright, but not ſtiff; and after that, paſſing his right leg clear over the ſaddle without rubbing againſt any thing, let him ſeat himſelf gently down. He muſt be cautious not to take the reins too ſhort, for fear of making the horſe, rear, run, or fall back, or throw up his head; but let him hold them of an equal length, neither tight nor ſlack, and with the little finger betwixt them. It is fit that horſes ſhould be accuſtomed to ſtand ſtill to be mounted, and not to ſtir till the rider pleaſes. All ſoldiers ſhould be inſtructed to mount and diſmount equally well on both ſides, which may be of great uſe in times of hurry and confuſion. Then place the man in his ſaddle, with his body rather back, and his head held up with eaſe, without ſtiffneſs; ſeated neither forwards nor very backwards; with the breaſt puſhed out a little, and the lower part of the body likewiſe a little forwards; the thighs and legs turned in without conſtraint, and the feet in a ſtraight line, neither turned in nor out. By this poſition, the natural weight of the thighs has a proper and ſufficient preſſure of itſelf; and the legs are in readineſs to act when called upon: they muſt hang down eaſily and naturally; and be ſo placed, as not to be wriggling about, touching, and tickling, the horſe's ſides, but always near them in caſe they ſhould be wanted, as well as the heels.

The body muſt be carefully kept eaſy and firm, and without any rocking when in motion; which is a bad habit very eaſily contracted, eſpecially in galloping. The left elbow muſt be gently leant againſt the body, a little forwards: unleſs it be ſo reſted, the hand cannot be ſteady, but will always be checking, and conſequently have pernicious effects on the horſe's mouth. And the hand ought to be of equal height with the elbow; if it were lower, it would conſtrain and confine the motion of the horſe's ſhoulders: but, as the mouths of horſes are different, the place of the hand alſo muſt occaſionally differ: a leaning, low, heavy, fore-head requires a high hand; and a horſe that pokes out his noſe, a low one. The right-hand arm muſt be placed in ſymmetry with the left; only let the right hand be a little forwarder or backwarder, higher or lower, as occaſions may require, in order that both hands may be free; both arms muſt be a little bent at the elbow, to prevent ſtiffneſs.

A ſoldier's right hand ſhould be kept unemployed in riding; it carries the ſword, which is a ſufficient buſineſs for it.

There remains one farther obſervation, that ought not to be omitted, about the hand, that it muſt be kept clear of the body; *i. e.* about two inches and a half forwards from it, with the nails turned oppoſite to the belly, and the wriſt a little rounded with eaſe; a poſition not leſs graceful than ready for ſlackening, tightening, and moving the reins from one ſide to the other, as may be found neceſſary.

When the men are well placed, the more rough trotting they have without ſtirrups the better; but with a ſtrict care always, that their poſition be preſerved very exactly. In all caſes, great care muſt be taken to hinder their clinging with their legs: in ſhort, no ſticking by hands or legs is ever to be allowed of at any time. If the motion of the horſe be too rough, ſlacken it, till the rider grows by degrees more firm; and when he is quite firm and eaſy on his horſe in every kind of motion, ſtirrups may be given him; but he muſt never leave off trotting often without any.

The ſtirrups muſt neither be ſhort nor long; but of ſuch a length, that when the rider, being well placed, puts his feet into them (about one third of the length of each foot from the point of it), the points may be between two and three inches higher than the heels. The rider muſt not bear upon his ſtirrups, but only

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Inſtructions concerning both Man and Horſe.

let the natural weight of his legs reſt on them: For if he bears upon them he would be raiſed above and out of his ſaddle; which ſhould never be, except in charging ſword in hand, with the body inclined forwards at the very inſtant of attacking. Spurs may be given as ſoon as the rider is grown familiar with ſtirrups; or even long before, if his legs are well placed.

A hand ſhould always be firm, but delicate: a horſe's mouth ſhould never be ſurpriſed by any ſudden tranſition of it, either from ſlack to tight, or from tight to ſlack. Every thing in horſemanſhip muſt be effected by degrees, but at the ſame time with ſpirit and reſolution. That hand which, by giving and taking properly, gains its point with the leaſt force, is the beſt; and the horſe's mouth, under this ſame hand's directions, will alſo conſequently be the beſt, ſuppoſing equal advantages in both from nature. This principle of gentleneſs ſhould be obſerved upon all occaſions in every branch of horſemanſhip. Sometimes the right hand may be neceſſary, upon ſome troubleſome horſes, to aſſiſt the left: but the ſeldomer this is done, the better; eſpecially in a ſoldier, who has a ſword to carry, and to make uſe of.

The ſnaffle muſt on all occaſions be uppermoſt; that is to ſay, the reins of it muſt be above thoſe of the bridle, whether the ſnaffle or the bit be uſed ſeparately, or whether they be both uſed together. When the rider knows enough, and the horſe is ſufficiently prepared and ſettled to begin any work towards ſuppling, one rein muſt be ſhortened according to the ſide worked to; but it muſt never be ſo much ſhortened, as to make the whole ſtrength reſt on that rein alone: for, not to mention that the work would be falſe and bad, one ſide of the horſe's mouth would by that means be always deadened; whereas on the contrary, it ſhould always be kept freſh by its own play, and by the help of the oppoſite rein's acting delicately in a ſomewhat ſmaller degree of tenſion; the joint effect of which produces in a horſe's mouth the proper, gentle and eaſy, degree of *appui* or bearing.

A coward and a madman make alike bad riders, and are both alike diſcovered and confounded by the ſuperior ſenſe of the creature they are mounted upon, who is equally ſpoilt by both, though in very different ways. The coward, by ſuffering the animal to have his own way, not only confirms him in his bad habits, but creates new ones in him: and the madman by falſe and violent motions and corrections, drives the horſe, through deſpair, into every bad and vicious trick that rage can ſuggeſt.

It is very requiſite in horſemanſhip, that the hand and legs ſhould act in correſpondence with each other in every thing; the latter always ſubſervient and aſſiſtant to the former. Upon circles, in walking, trotting, or galloping, the outward leg is the only one to be uſed, and that only for a moment at a time, in order to ſet off the horſe true, or put him right if he be falſe; and as ſoon as that is done, it muſt be taken away again immediately; but if the horſe be lazy, or otherwiſe retains himſelf, both legs muſt be uſed and preſſed to his ſides at the ſame time together. The leſs the legs are uſed in general, the better. Very delicate good riders, with horſes they have dreſſed themſelves, will ſcarcely ever want their help. By the term *outward* is underſtood the ſide which is more remote from the centre; and by *inward* is meant the ſide next to the centre. In reining back, the rider ſhould be careful not to uſe his legs, unleſs the horſe backeth on his ſhoulders; in which caſe they muſt be both applied gently at the ſame time, and correſpond with the hand. If the horſe refuſe to back at all, the rider's legs muſt be gently approached, till the horſe lifts up a leg, as if to go forwards; at which time, when that leg is in the air, the rein of the ſame ſide with that leg which is lifted up, will eaſily bring the ſame leg backwards, and accordingly oblige the horſe to back; but if the horſe offers to rear, the legs muſt be inſtantly removed away. The inward rein muſt be tighter on circles, ſo that the horſe may bend and look inwards; and the outward one croſſed over a little towards it; and both held in the left hand.

Inſtructions concerning both Man and Horſe.

Let the man and horſe begin on very ſlow motions, that they may have time to underſtand and reflect on what is taught them; and in proportion as the effects of the reins are better comprehended, and the manner of working becomes more familiar, the quickneſs of motion muſt be increaſed. Every rider muſt learn to feel, without the help of the eye, when a horſe goes falſe, and remedy the fault accordingly: this is an intelligence, which nothing but practice, application, and attention, can give, in the beginning on ſlow motions. A horſe may not only gallop falſe, but alſo trot and walk falſe. If a horſe gallops falſe, that is to ſay, if going to the right he leads with the left leg, or if going to the left he leads with the right; or in caſe he is diſunited, *i. e.* he leads with the oppoſite leg behind to that which he leads with before; ſtop him immediately, and put him off again properly. The method of effecting this, is by approaching your outward leg, and putting your hand outwards; ſtill keeping the inward rein the ſhorter, and the horſe's head inwards, if poſſible: and if he ſhould ſtill reſiſt, then bend and pull his head outwards alſo; but replace it again, bent properly inwards, the moment he goes off true. A horſe is ſaid to be diſunited to the right, when going to the right, and conſequently leading with the right leg before, he leads with the left behind; and is ſaid to be diſunited to the left, when going to the left, and conſequently leading with the left leg before, he leads with the right behind. A horſe may at the ſame time be both falſe and diſunited; in correcting both which faults, the ſame method muſt be uſed. He is both falſe and diſunited to the right, when in going to the right he leads with the left leg before, and the right behind; notwithſtanding that hinder leg be with propriety more forward under his belly than the left, becauſe the horſe is working to the right: And he is falſe and diſunited to the left, when in going to the left he leads with the right leg before and the left behind; notwithſtanding, as above, that hinder leg be with propriety more forward under his belly than the right, becauſe the horſe is working to the left.

In teaching men a right ſeat on horſeback, the greateſt attention muſt be given to prevent ſtiffneſs and ſticking by force in any manner upon any occaſion:

Of ſuppling Horſes.

ſion: ſtiffneſs diſgraces every right work; and ſticking ſerves only to throw a man (when diſplaced) a great diſtance from his horſe by the ſpring he muſt go off with: whereas by a proper equilibrating poſition of the body, and by the natural weight only of the thighs he cannot but be firm and ſecure in his ſeat.

As the men become more firm, and the horſes more ſupple it is proper to make the circles leſs; but not too much ſo, for fear of throwing the horſes forwards upon their ſhoulders.

Some horſes, when firſt the bit is put into their mouths, if great care be not taken, will put their heads very low. With ſuch horſes raiſe your right hand with the *bridoon* in it, and play at the ſame time with the bit in the left hand, giving and taking.

On circles, the rider muſt lean his body inwards; unleſs great attention be given to make him do it, he will be perpetually loſing his ſeat outwards. It is ſcarce poſſible for him to be diſplaced, if he leans his body properly inwards.

SECT. III. *The Method of ſuppling Horſes with Men upon them, by the* EPAULE en dedans, *&c. with and without a* Longe, *on Circles and on ſtraight Lines.*

WHEN a horſe is well prepared and ſettled in all his motions, and the rider firm, it will be proper then to proceed on towards a further ſuppling and teaching of both.

In ſetting out upon this new work, begin by bringing the horſe's head a little more inward than before, pulling the inward rein gently to you by degrees. When this is done, try to gain a little on the ſhoulders, by keeping the inward rein the ſhorter, as before, and the outward one croſſed over towards the inward one. The intention of theſe operations is this: The inward rein ſerves to bring in the head, and procures the bend; whilſt the outward one, that is a little croſſed, tends to make that bend perpendicular and as it ſhould be, that is to ſay, to reduce the noſe and the forehead to be in a perpendicular line with each other: it alſo ſerves, if put forwards, as well as alſo croſſed, to put the horſe forwards, if found neceſſary; which is often requiſite, many horſes being apt in this and other works rather to loſe their ground backwards than otherwiſe, when they ſhould rather advance; if the noſe were drawn in towards the breaſt beyond the perpendicular, it would confine the motion of the ſhoulders, and have other bad effects. All other bends, beſides what are above ſpecified, are falſe. The outward rein, being croſſed, not in a forward ſenſe, but rather a little backwards, ſerves alſo to prevent the outward ſhoulder from getting too forwards, and makes it approach the inward one; which facilitates the inward leg's croſſing over the outward one, which is the motion that ſo admirably ſupples the ſhoulders. Care muſt be taken, that the inward leg paſs over the outward one, without touching it: this inward leg's croſſing over muſt be helped alſo by the inward rein, which you muſt croſs towards and over the outward rein every time the outward leg comes to the ground, in order to lift and help the inward leg over it: at any other time, but juſt when the outward leg comes to the ground, it would be wrong to croſs the inward rein, or to attempt to lift up the inward leg by it; nay, it would be demanding an abſolute impoſſibility, and lugging about the reins and horſe to no purpoſe: becauſe in this caſe, a very great part of the horſe's weight reſting then upon that leg, would render ſuch an attempt not only fruitleſs, but alſo prejudicial to the ſenſibility of the mouth, and probably oblige him to defend himſelf: and, moreover, it would put the horſe under a neceſſity of ſtraddling before, and alſo of leading with the wrong leg, without being productive of any ſuppling motion whatſoever.

Directions for Men and Horſes.

When the horſe is thus far familiarly accuſtomed to what you have required of him, then proceed to effect by degrees the ſame croſſing in his hinder legs. By bringing in the fore legs more, you will of courſe engage the hinder ones in the ſame work; if they reſiſt, the rider muſt bring both reins more inwards; and, if neceſſary, put back alſo, and approach his inward leg to the horſe; and if the horſe throws out his croup too far, the rider muſt bring both reins outwards, and, if abſolutely neceſſary, he muſt alſo make uſe of his outward leg, in order to replace the horſe properly: obſerving that the croup ſhould always be conſiderably behind the ſhoulders, which in all actions muſt go firſt; and the moment that the horſe obeys, the rider muſt put his hand and leg again in their uſual poſition.

Nothing is more ungraceful in itſelf, more detrimental to a man's ſeat, or more deſtructive of the ſenſibility of a horſe's ſides, than a continual wriggling unſettledneſs in a horſeman's legs, which prevents the horſe from ever going a moment together true, ſteady, or determined.

A horſe ſhould never be turned, without firſt moving a ſtep forwards: and when it is doing, the rider muſt not lift his elbow, and diſplace himſelf; a motion only of the hand from the one ſide to the other being ſufficient for that purpoſe. It muſt alſo be a conſtant rule, never to ſuffer a horſe to be ſtopped, mounted, or diſmounted, but when he is well placed. The ſlower the motions are when a man or horſe is taught any thing, the better.

At firſt, the figures worked upon muſt be great, and afterwards made leſs by degrees, according to the improvement which the man and horſe make; and the cadenced pace alſo, which they work in, muſt be accordingly augmented. The changes from one ſide to the other, muſt be in a bold determined trot, and at firſt quite ſtraight forwards, without demanding any ſide-motion on two *piſtes*, which is very neceſſary to require afterwards when the horſe is ſufficiently ſuppled. By two *piſtes* is meant, when the fore-parts and hinder parts do not follow, but deſcribe two different lines.

In the beginning, a *longe* is uſeful on circles, and alſo on ſtraight lines, to help both the rider and the horſe; but afterwards, when they are grown more intelligent, they ſhould go alone. At the end of the leſſon, rein back; then put the horſe, by a little at a time, forwards, by approaching both legs gently to his ſides, and playing with the bridle: if he rears, puſh him out immediately into a full trot. Shaking the *caveſſon* on the horſe's noſe, and alſo putting one's ſelf before him and rather near to him, will generally make him back, though he otherwiſe refuſe to do it: and moreover a ſlight uſe and approaching of the rider's

legs,

Of Head to the Wall, &c.

legs, will ſometimes be neceſſary in backing, in order to prevent the horſe from doing it too much upon his ſhoulders; but the preſſure of the legs ought to be very ſmall, and taken quite away the moment that he puts himſelf enough upon his haunches. If the horſe does not back upon a ſtraight line properly, the rider muſt not be permitted to have recourſe immediately to his leg, and ſo diſtort himſelf by it; but firſt try, if croſſing over his hand and reins to which ever ſide may be neceſſary, will not be alone ſufficient: which moſt frequently it will; if not, then employ the leg.

After a horſe is well prepared and ſettled, and goes freely on in all his ſeveral paces, he ought to be in all his works kept, to a proper degree, upon his haunches, with his hinder legs well placed under him; whereby he will be always pleaſant to himſelf and his rider, will be light in hand, and ready to execute whatever may be demanded of him, with facility, vigour, and quickneſs.

The common method that is uſed, of forcing a horſe ſidewiſe, is a moſt glaring abſurdity, and very hurtful to the animal in its conſequences; for inſtead of ſuppling him, it obliges him to ſtiffen and defend himſelf, and often makes a creature that is naturally benevolent, reſtive, frightened, and vicious.

For horſes, who have very long and high fore-hands, and who poke out their noſes, a running ſnaffle is of excellent uſe; but for ſuch as bore and keep their heads low, a common one is preferable; though any horſe's head indeed may be kept up alſo with a running one, by the rider's keeping his hands very high and forwards: but wherever either is uſed alone without a bridle upon horſes that carry their heads low and that bore, it muſt be ſawed about from one ſide to the other.

This leſſon of the *epaule en dedans* ſhould be taught to ſuch people as are likely to become uſeful in helping to teach men and to break horſes; and the more of ſuch that can be found the better: none others ſhould ever be ſuffered upon any occaſion to let their horſes look any way beſides the way they are going. But all horſes whatever, as likewiſe all men who are deſigned for the teaching others, muſt go thoroughly and perfectly through this excellent leſſon, under the directions of intelligent inſtructors, and often practiſe it too afterwards; and when that is done, proceed to and be finiſhed by the leſſons of head and tail to the wall.

Sect. IV. *Of the Head to the Wall, and of the Croup to the Wall.*

This leſſon ſhould be practiſed immediately after that of the *epaule en dedans*, in order to place the horſe properly the way he goes, &c. The difference between the head to the wall, and the croup to the wall, conſiſts in this: in the former, the fore-parts are more remote from the centre, and go over more ground; in the latter, the hinder parts are more remote from the centre, and conſequently go over more ground: and both, as likewiſe in all other leſſons, the ſhoulders muſt go firſt. In riding-horſes, the head to the wall is the eaſier leſſon of the two at firſt, the line to be worked upon being marked by the wall, not far from his head.

Of Head to the Wall, &c.

The motion of the legs to the right, is the ſame as that of the *epaule en dedans* to the left, and ſo *vice verſa*; but the head is always bent and turned differently: in the *epaule en dedans*, the horſe looks the contrary way to that which he goes; in this, he looks the way he is going.

In the beginning, very little bend muſt be required; too much at once would aſtoniſh the horſe, and make him defend himſelf: it is to be augmented by degrees. If the horſe abſolutely refuſes to obey, it is a ſign that either he or his rider has not been ſufficiently prepared by previous leſſons. It may happen, that weakneſs or a hurt in ſome part of the body, or ſometimes temper, though ſeldom, may be the cauſe of the horſe's defending himſelf: it is the rider's buſineſs to find out from whence the obſtacle ariſes; and if he finds it to be from the firſt mentioned cauſe, the previous leſſons muſt be reſumed again for ſome time; if from the ſecond, proper remedies muſt be applied; and if from the laſt cauſe, when all fair means that can be tried have failed, proper corrections with coolneſs and judgment muſt be uſed.

In practiſing this leſſon to the right, bend the horſe to the right with the right rein; helping the left leg over the right (at the time when the right leg is juſt come to the ground), with the left rein croſſed towards the right, and keeping the right ſhoulder back with the right rein towards your body, in order to facilitate the left leg's croſſing over the right; and ſo likewiſe *vice verſa* to the left, each rein helping the other by their properly mixed effects. In working to the right, the rider's left leg helps the hinder-parts on to the right, and his right leg ſtops them if they get too forwards; and ſo *vice verſa* to the left: but neither ought to be uſed, till the hand being employed in a proper manner has failed, or finds that a greater force is neceſſary to bring about what is required than it can effect alone: for the legs ſhould not only be correſponding with, but alſo ſubſervient to, the hand; and all unneceſſary aids, as well as all force, ought always to be avoided as much as poſſible.

In the execution of all leſſons, the equilibre of the rider's body is of great uſe to the horſe: it ought always to go with and accompany every motion of the animal; when to the right, to the right; and when to the left, to the left.

Upon all horſes, in every leſſon and action, it muſt be obſerved, that there is no horſe but has his own peculiar appui or degree of bearing, and alſo a ſenſibility of mouth, as likewiſe a rate of his own, which it is abſolutely neceſſary for the rider to diſcover and make himſelf acquainted with. A bad rider always takes off at leaſt the delicacy of both, if not abſolutely deſtroys it. The horſe will inform his rider when he has got his proper bearing in the mouth, by playing pleaſantly and ſteadily with his bit, and by the ſpray about his chaps. A delicate and good hand will not only always preſerve a light appui, or bearing, in its ſenſibility; but alſo of a heavy one, whether naturally ſo or acquired, make a light one. The lighter this appui can be made, the better; provided that the rider's hand correſponds with it; if it does not, the more the horſe is properly prepared, ſo much the worſe. Inſtances of this inconvenience of the beſt of

appuis.

To make Horſes ſtand Fire, &c.

appuis, when the rider is not equally taught with the horſe, may be ſeen every day in ſome gentlemen, who try to get their horſes *bitted* as they call it, without being ſuitably prepared themſelves for riding them; the conſequence of which is, that they ride in danger of breaking their necks; till at length, after much hauling about, and by the joint inſenſibility and ignorance of themſelves and their grooms, the poor animals gradually become mere ſenſeleſs unfeeling poſts; and thereby grow, what they call, *ſettled*. When the proper appui is found, and made of courſe as light as poſſible, it muſt not be kept duly fixed without any variation, but be played with; otherwiſe one equally-continued tenſion of reins would render both the rider's hand and the horſe's mouth very dull. The ſlighteſt and frequent giving and taking is therefore neceſſary to keep both perfect.

Whatever pace or degree of quickneſs you work in, (be it ever ſo faſt, or ever ſo ſlow), it muſt be cadenced; time is as neceſſary for a horſeman as for a muſician.

This leſſon of the head and of the tail to the wall, muſt be taught every ſoldier: ſcarce any manœuvre can be well performed without it. In cloſing and opening of files, it is almoſt every moment wanted.

Sect. V. *The Method of making Horſes ſtand Fire, Noiſes, Alarms, Sights,* &c.

In order to make horſes ſtand fire, the ſound of drums, and all ſorts of different noiſes, you muſt uſe them to it by degrees in the ſtable at feeding-time; and inſtead of being frightened at it, they will ſoon come to like it as a ſignal for eating.

With regard to ſuch horſes as are afraid of burning objects, begin by keeping them ſtill at a certain diſtance from ſome lighted ſtraw: careſs the horſe; and in proportion as his fright diminiſhes, approach gradually the burning ſtraw very gently, and increaſe the ſize of it. By this means he will very quickly be brought to be ſo familiar with it, as to walk undaunted even through it.

As to horſes that are apt to lie down in the water, if animating them, and attacking them vigorouſly, ſhould fail of the deſired effect, then break a ſtraw-bottle full of water upon their heads, and let the water run into their ears, which is a thing they apprehend very much.

All troop-horſes muſt be taught to ſtand quiet and ſtill when they are ſhot off from, to ſtop the moment you preſent, and not to move after firing till they are required to do it; this leſſon ought eſpecially to be obſerved in light troops: in ſhort, the horſes muſt be taught to be ſo cool and undiſturbed, as to ſuffer the rider to act upon him with the ſame freedom as if he was on foot. Patience, coolneſs, and temper, are the only means requiſite for accompliſhing this end. Begin by walking the horſe gently, then ſtop and keep him from ſtirring for ſome time, ſo as to accuſtom him by degrees not to have the leaſt idea of moving without orders: if he does, then back him; and when you ſtop him, and he is quite ſtill, leave the reins quite looſe.

To uſe a horſe to fire-arms, firſt put a piſtol or a carabine in the manger with his feed; then uſe him to the ſound of the lock and the pan; after which, when you are upon him, ſhow the piece to him, preſenting it forwards, ſometimes on one ſide, ſometimes on the other: when he is thus far reconciled, proceed to flaſh in the pan; after which, put a ſmall charge into the piece, and ſo continue augmenting it by degrees to the quantity which is commonly uſed: if he ſeems uneaſy, walk him forward a few ſteps ſlowly; and then ſtop, back, and careſs him. Horſes are often alſo diſquieted and unſteady at the claſh, and drawing, and returning of ſwords; all which they muſt be familiarized to by little and little, by frequency and gentleneſs.

To make Horſes ſtand Fire, &c.

It is very expedient for all cavalry in general, but particularly for light cavalry, that their horſes ſhould be very ready and expert in leaping over ditches, hedges, gates, &c. The leaps, of whatever ſort they are, which the horſes are brought to in the beginning, ought to be very ſmall ones; the riders muſt keep their bodies back, raiſe their hands a little in order to help the fore-parts of the horſe up, and be very attentive to their equilibre. It is beſt to begin at a low bar covered with furze, which pricking the horſe's legs, if he does not raiſe himſelf ſufficiently, prevents his contracting a ſluggiſh and dangerous habit of touching, as he goes over, which any thing yielding and not pricking would give him a cuſtom of doing. Let the ditches you firſt bring horſes to be narrow; and in this, as in every thing elſe, let the increaſe be made by degrees. Accuſtom them to come up to every thing which they are to leap over, and to ſtand coolly at it for ſome time; and then to raiſe themſelves gently up in order to form to themſelves an idea of the diſtance. When they leap well ſtanding, then uſe them to walk gently up to the leap, and to go over it without firſt halting at it; and after that practice is familiar to them, repeat the like in a gentle trot, and ſo by degrees faſter and faſter, till at length it is as familiar to them to leap flying on a full gallop as any other way; all which is to be acquired with great facility by calm and ſoft means, without any hurry.

As horſes are naturally apt to be frightened at the ſight and ſmell of dead horſes, it is adviſable to habituate them to walk over and leap over carcaſes of dead horſes: and as they are particularly terrified at this ſight, the greater gentleneſs ought conſequently to be uſed.

Horſes ſhould alſo be accuſtomed to ſwim, which often may be neceſſary upon ſervice; and if the men and horſes both are not uſed to it, both may be frequently liable to periſh in the water. A very ſmall portion of ſtrength is ſufficient to guide a horſe, any-where indeed, but particularly in the water, where they muſt be permitted to have their heads, and be no-ways conſtrained in any ſhape.

The unreaſonable rage in Britain of cutting off all extremities from horſes, is in all caſes a very pernicious cuſtom. It is particularly ſo in regard to a troop-horſe's tail. It is almoſt incredible, how much they ſuffer at the picket for want of it: conſtantly fretting, and ſweating, kicking about and laming one another, tormented, and ſtung off their meat, miſerable, and helpleſs; whilſt other horſes, with their tails on, bruſh off all flies, are cool and at their eaſe, and mend daily; whilſt the docked ones grow every hour more and more out of condition.

Sect.

Of reining back, &c.

Sect. VI. *The Method of reining back,—and of moving forwards immediately after;—of Piafing,—of Pillars,* &c.

Never finiſh your work by reining back with horſes that have any diſpoſition towards retaining themſelves; but always move them forwa ds, and a little upon the haunches alſo, after it, before you diſmount, (unleſs they retain themſelves very much indeed, in which caſe nothing at all muſt be demanded from the haunches). This leſſon of reining back, and piafing, is excellent to conclude with, and puts an horſe well and properly on the haunches: it may be done, according as horſes are more or leſs ſuppled, either going forward, backing, or in the ſame place: if it is done well advancing, or at moſt on the ſame ſpot, it is full ſufficient for a ſoldier's horſe: For to piafe in backing, is rather too much to be expected in the hurry which cannot but attend ſuch numbers both of men and horſes as muſt be taught together in regiments. This leſſon muſt never be attempted at all, till horſes are very well ſuppled, and ſomewhat accuſtomed to be put together; otherwiſe it will have very bad conſequences, and create reſtiveneſs. If they refuſe to back, and ſtand motionleſs, the rider's legs muſt be approached with the greateſt gentleneſs to the horſe's ſides; at the ſame time that the hand is acting on the reins to ſolicit the horſe's backing. This ſeldom fails of procuring the deſired effect, by raiſing one of the horſe's fore-legs, which being in the air, has no weight upon it, and is conſequently very eaſily brought backwards by a ſmall degree of tenſion in the reins. When this leſſon is well performed, it is very noble and uſeful, and has a pleaſing air; it is an excellent one to begin teaching ſcholars with.

The leſſon is particularly ſerviceable in the pillars, for placing ſcholars well at firſt. Very few regimental riding-houſes have pillars, and it is fortunate they have not: for though, when properly made uſe of with ſkill, they are one of the greateſt and beſt diſcoveries in horſemanſhip; they muſt be allowed to be very dangerous and pernicious, when they are not under the direction of a very knowing perſon.

Of curing Reſtiveneſs &c.

Sect. VII. *The Method of curing Reſtiveneſſes, Vices, Defences, Starting,* &c.

Whenever a horſe makes reſiſtance, one ought, before remedy or correction is thought of, to examine very minutely all the tackle about him, if any thing hurts or tickles him, whether he has any natural or accidental weakneſs, or in ſhort any the leaſt impediment in any part. For want of this precaution, many fatal diſaſters happen: the poor dumb animal is frequently accuſed falſely of being reſtive and vicious; is uſed ill without reaſon; and, being forced into deſpair, is in a manner obliged to act accordingly, be his temper and inclination ever ſo well diſpoſed. It is very ſeldom the caſe, that a horſe is realy and by nature vicious; but if ſuch be found, he will deſpiſe all careſſes, and then chaſtiſements become neceſſary.

Correction, according as you uſe it, throws a horſe into more or leſs violent action, which, if he be weak, he cannot ſupport: but a vicious ſtrong horſe is to be conſidered in a very different light, being able both to undergo and conſequently to profit by all leſſons; and is far preferable to the beſt natured weak one upon earth. Patience and attention are never failing means to reclaim ſuch a horſe: in whatſoever manner he defends himſelf, bring him back frequently with gentleneſs (not however without having given him proper chaſtiſement if neceſſary) to the leſſon which he ſeems moſt averſe to. Horſes are by degrees made obedient, through the hope of recompenſe and the fear of puniſhment: how to mix theſe two motives judiciouſly together, is a very difficult matter; it requires much thought and practice; and not only a good head, but a good heart likewiſe. The cooleſt and beſt natured rider will always ſucceed beſt. By a dexterous uſe of the incitements abovementioned, you will gradually bring the horſe to temper and obedience; mere force, and want of ſkill and coolneſs, would only tend to confirm him in his bad tricks. If he be impatient or choleric, never ſtrike him, unleſs he abſolutely refuſe to go forwards; which you muſt reſolutely oblige him to do, and which will be of itſelf a correction, by preventing his having time to meditate and put in execution any defence by retaining himſelf. Reſiſtance in horſes, you muſt conſider, is ſometimes a mark of ſtrength and vigour, and proceeds from ſpirit, as well as ſometimes from vice and weakneſs. Weakneſs frequently drives horſes into viciouſneſs, when any thing wherein ſtrength is neceſſary is demanded from them; nay, it inevitably muſt; great care therefore ſhould always be taken to diſtinguiſh from which of theſe two cauſes any remedy or puniſhment is thought of. It may ſometimes be a bad ſign when horſes do not at all defend themſelves, and proceed from a ſluggiſh diſpoſition, a want of ſpirit, and of a proper ſenſibility. Whenever one is ſo fortunate as to meet with a horſe of juſt the right ſpirit, activity, delicacy of feeling, with ſtrength and good nature, he cannot be cheriſhed too much; for ſuch a one is a rare and ineſtimable jewel, and, if properly treated, will in a manner do every thing of himſelf. Horſes are oftner ſpoilt by having too much done to them, and by attempts to dreſs them in too great a hurry, than by any other treatment.

If after a horſe has been well ſuppled, and there are no impediments, either natural or accidental, if he ſtill perſiſts to defend himſelf, chaſtiſement then becomes neceſſary: but whenever this is the caſe, they muſt not be frequent, but always firm, though always as little violent as poſſible; for they are both dangerous and very prejudicial when frequently or ſlightly played with, and ſtill more ſo when uſed too violently.

It is impoſſible, in general, to be too circumſpect in leſſons of all kinds, in aids, chaſtiſements, or careſſes. Some have quicker parts, and more cunning, than others. Many will imperceptibly gain a little every day on the rider. Various, in ſhort, are their diſpoſitions and capacities. It is the rider's buſineſs to find out their different qualities, and to make them ſenſible how much he loves them, and deſires to be loved by them; but at the ſame time that he does not fear them, and will be maſter.

Plunging is a very common defence among reſtive and vicious horſes: if they do it in the ſame place, or backing, they muſt, by the rider's legs and ſpurs

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firmly applied, be obliged to go forwards, and their heads kept up high. But if they do it flying forwards, keep them back, and ride them gently and very ſlow for a good while together. Of all bad tempers and qualities in horſes, thoſe which are occaſioned by harſh treatment and ignorant riders are the worſt.

Rearing is a bad vice, and, in weak horſes eſpecially, a very dangerous one. Whilſt the horſe is up, the rider muſt yield his hand; and when the horſe is deſcending, he muſt vigorouſly determine him forwards: if this be done at any other time but whilſt the horſe is coming down, it may add a ſpring to his rearing, and make him fall backwards. With a good hand on them, horſes ſeldom perſiſt in this vice; for they are themſelves naturally much afraid of falling backwards. If this method fails, you muſt make the horſe kick up behind, by getting ſomebody on foot to ſtrike him behind with a whip; or, if that will not effect it, by pricking him with a goad.

Starting often proceeds from a defect in the ſight; which therefore muſt be carefully looked into. Whatever the horſe is afraid of, bring him up to it gently; if you careſs him every ſtep he advances, he will go quite up to it by degrees, and ſoon grow familiar with all ſorts of objects. Nothing but great gentleneſs can correct this fault; for if you inflict puniſhment, the apprehenſion of chaſtiſement becomes prevalent, and cauſes more ſtarting than the fear of the object. If you let him go by the object, without bringing him up to it, you increaſe the fault, and confirm him in his fear; the conſequence of which is, he takes his rider perhaps a quite contrary way from what he was going, becomes his maſter, and puts himſelf and the perſon upon him every moment in great danger.

With ſuch horſes as are to a very great degree fearful of any objects, make a quiet horſe, by going before them, gradually intice them to approach nearer and nearer to the thing they are afraid of. If the horſe, thus alarmed, be undiſciplined and head ſtrong, he will probably run away with his rider; and if ſo, his head muſt be kept up high, and the ſnaffle ſawed backwards and forwards from right to left, taking up and yielding the reins of it, as alſo the reins of the bit: but this latter muſt not be ſawed backwards and forwards like the ſnaffle, but only taken up and yielded properly. No man ever yet did, or ever will, ſtop a horſe, or gain any one point over him, by main force, or by pulling a dead weight againſt him.

Sect. VIII. *Rules for bad Horſemen.*

Thomſon's Rules.

In the firſt place every horſe ſhould be accuſtomed to ſtand ſtill when he is mounted. One would imagine this might be readily granted; yet we ſee how much the contrary is practiſed. When a gentleman mounts at a livery-ſtable, the groom takes the horſe by the bit, which he bends tight round his under-jaw: the horſe ſtriving to go on, is forced back; advancing again, he frets, as he is again ſtopped ſhort, and hurt by the manner of holding him. The rider, in the mean time, mounting without the bridle, or at leaſt holding it but ſlightly, is helped to it by the groom, who being thoroughly employed by the horſe's fluttering, has at the ſame time both bridle and ſtirrup to give. This confuſion would be prevented, if every horſe was taught to ſtand ſtill when he is mounted. Forbid your groom, therefore, when he rides your horſe to water, to throw himſelf over him from a horſe-block, and kick him with his leg, even before he is fairly upon him. This wrong manner of mounting is what chiefly teaches your horſe the vicious habit againſt which we are here warning. On the other hand, a conſtant practice of mounting in the proper manner, is all that is neceſſary to prevent a horſe's going on till the rider is quite adjuſted in the ſaddle.

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The next thing neceſſary therefore is, that the rider ſhould mount properly. The common method is to ſtand near the croup or hinder part of the horſe, with the bridle held very long in the right hand. By this manner of holding the bridle before you mount, you are liable to be kicked; and when you are mounted, your horſe may go on ſome time, or play what gambols he pleaſes, before the rein is ſhort enough in your hand to prevent him. It is common likewiſe for an aukward rider, as ſoon as his foot is in the ſtirrup, to throw himſelf with all his force to gain his ſeat: which he cannot do, till he hath firſt overbalanced himſelf on one ſide or the other: he will then wriggle into it by degrees. The way to mount with eaſe and ſafety is, to ſtand rather before than behind the ſtirrup. In this poſture take the bridle ſhort, and the mane together in your left hand, helping yourſelf to the ſtirrup with your right, ſo that your toe may not touch the horſe in mounting. When your left foot is in the ſtirrup, move on your right, till you face the ſide of the horſe, looking acroſs over the ſaddle. Then with your right hand graſp the hinder part of the ſaddle; and with that and your left; which holds the mane and bridle, lift yourſelf upright on your left foot. Remain thus a mere inſtant on your ſtirrup, only ſo as to divide the action into two motions. While you are in this poſture, you have a ſure hold with both hands, and are at liberty, either to get ſafely down, or to throw your leg over and gain your ſeat. By this deliberate motion, likewiſe, you avoid, what every good horſeman would endeavour to avoid, putting your horſe into a flutter.

When you diſmount, hold the bridle and mane together in your left hand, as when you mounted; put your right hand on the pommel of the ſaddle, to raiſe yourſelf; throw your leg back over the horſe, graſp the hinder part of the ſaddle with your right hand, remain a moment on your ſtirrup, and in every reſpect diſmount as you mounted; only what was your firſt motion when you mounted, becomes the laſt in diſmounting. Remember not to bend your right knee in diſmounting, leſt your ſpur ſhould rub againſt the horſe.

It may be next recommended to hold your bridle at a convenient length. Sit ſquare, and let not the purchaſe of the bridle pull forward your ſhoulder; but keep your body *even*, as it would be if each hand held a rein. Hold your reins with the whole graſp of your hand, dividing them with your little finger. Let your hand be perpendicular; your thumb will then be uppermoſt, and placed on the bridle. Bend your wriſt

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wriſt a little outward; and when you pull the bridle, raiſe your hand toward your breaſt, and the lower part of the palm rather more than the upper. Let the bridle be at ſuch a length in your hand, as, if the horſe ſhould ſtumble, you may be able to raiſe his head, and ſupport it by the ſtrength of your arms, and the weight of your body thrown backward. If you hold the rein too long, you are ſubject to fall backward as your horſe riſes.

If, knowing your horſe perfectly well, you think a tight rein unneceſſary, advance your arm a little (but not your ſhoulder) towards the horſe's head, and keep your uſual length of rein. By this means, you have a check upon your horſe, while you indulge him.

If you ride with a curb, make it a rule to hook on the chain yourſelf; the moſt quiet horſe may bring his rider into danger, ſhould the curb hurt him. If, in fixing the curb, you turn the chain to the right, the links will unfold themſelves, and then oppoſe a farther turning. Put on the chain looſe enough to hang down on the horſe's under lip, ſo that it may not riſe and preſs his jaw, till the reins of the bridle are moderately pulled.

If your horſe has been uſed to ſtand ſtill when he is mounted, there will be no occaſion for a groom to hold him: but if he does, ſuffer him not to touch the reins, but that part of the bridle which comes down the cheek of the horſe. He cannot then interfere with the management of the reins, which belongs to the rider only; and holding a horſe by the curb (which is ever painful to him) is evidently improper when he is to ſtand ſtill.

Another thing to be remembered is, not to ride with your arms and elbows as high as your ſhoulders; nor let them ſhake up and down with the motion of the horſe. The poſture is unbecoming, and the weight of the arms (and of the body too if the rider does not ſit ſtill) acts in continual jerks on the jaw of the horſe, which muſt give him pain, and make him unquiet, if he has a tender mouth or any ſpirit.

Bad riders wonder why horſes are gentle as ſoon as they are mounted by ſkilful ones, tho' their ſkill ſeems unemployed, the reaſon is, the horſe goes at his eaſe, yet finds all his motions watched; which he has ſagacity enough to diſcover. Such a rider hides his whip, if he finds his horſe is afraid of it; and keeps his legs from his ſides, if he finds he dreads the ſpur.

Avoid the ungraceful cuſtom of letting your legs ſhake againſt the ſides of the horſe: and as you are not to keep your arms and elbows high, and in motion; ſo you are not to rivet them to your ſides, but let them fall eaſy. One may, at a diſtance, diſtinguiſh a genteel horſeman from an aukward one; the firſt ſits ſtill, and appears of a piece with his horſe; the latter ſeems flying off at all points.

It is often ſaid with emphaſis, that ſuch a one has no *ſeat* on horſeback; and it means, not only that he does not ride well, but that he does not ſit on the right part of the horſe. To have a *good ſeat*, is to ſit on that part of the horſe, which, as he ſprings, is the centre of motion; and from which, of courſe, any weight would be with moſt difficulty ſhaken. As in the riſing and falling of a board placed in *æquilibrio*, the centre will be always moſt at reſt; the true ſeat will be found in that part of your ſaddle, into which your body would naturally ſlide, if you rode without ſtirrups; and is only to be preſerved by a proper poiſe of the body, though the generality of writers imagine it is to be done by the graſp of the thighs and knees. The rider ſhould conſider himſelf as united to his horſe in this point; and when ſhaken from it, endeavour to reſtore the balance.

Perhaps the mention of the two extremes of a bad ſeat may help to deſcribe the true one. The one is, when the rider ſits very far back on the ſaddle, ſo that his weight preſſes the loins of the horſe; the other, when his body hangs forward over the pommel of the ſaddle. The firſt may be ſeen practiſed by grooms, when they ride with their ſtirrups affectedly ſhort; the latter, by fearful horſemen on the leaſt flutter of the horſe. Every *good* rider has, even on the hunting ſaddle, as *determined* a place for his thighs, as can be determined for him by the bars of a demi-peak. Indeed there is no difference between the ſeat of either: only, as in the firſt you ride with ſhorter ſtirrups, your body will be conſequently more behind your knees.

To have a good ſeat yourſelf, your ſaddle muſt fit well. To fix a preciſe rule might be difficult: it may be a *direction*, to have your ſaddle preſs as nearly as poſſible on that part which we have deſcribed as the point of union between the man and horſe; however, ſo as not to obſtruct the motion of the horſe's ſhoulders. Place yourſelf in the middle or loweſt part of it: ſit erect; but with as little conſtraint as in your ordinary ſitting. The eaſe of action marks the gentleman: you may repoſe yourſelf, but not lounge. The ſet and ſtudied erectneſs acquired in the riding-houſe, by thoſe whoſe department is not eaſy, appears ungenteel and unnatural.

If your horſe ſtops ſhort, or endeavours by riſing and kicking to unſeat you, bend not your body forward, as many do in thoſe circumſtances: that motion throws the breach backward, and you off your fork or twiſt, and out of your ſeat: whereas, the advancing the lower part of your body, and bending back the upper part and ſhoulders, is the method both to keep your ſeat, and to recover it when loſt. The bending your body back, and that in a great degree, is the greateſt ſecurity in *flying* leaps; it is a ſecurity too, when your horſe leaps *ſtanding*. The horſe's riſing does not try the rider's ſeat; the laſh of his hind legs is what ought chiefly to be guarded againſt, and is beſt done by the body's being greatly inclined back. Stiffen not your legs or thighs; and let your body be pliable in the loins, like the coachman's on his box. This looſe manner of ſitting will elude every rough motion of the horſe; whereas the fixture of the knees, ſo commonly laid a ſtreſs on, will in great ſhocks conduce to the violence of the fall.

Was the cricket-player, when the ball is ſtruck with the greateſt velocity, to hold his hand firm and fixed when he receives it, the hand would be bruiſed, or perhaps the bones fractured by the reſiſtance. To obviate this accident, he therefore gradually yields his hand to the motion of the ball for a certain diſtance; and thus by a due mixture of oppoſition and obedience, catches it without ſuſtaining the leaſt injury. The caſe is exactly the ſame in riding: the ſkilful horſeman will recover his poiſe by giving ſome way to the motion; and the ignorant horſeman will be flung out of his ſeat by endeavouring to be fixed.

Stretch not out your legs before you; this will puſh you againſt the back of the ſaddle: neither gather up your knees, like a man riding on a pack; this throws your thighs upwards: each practice unſeats you. Keep your legs ſtraight down; and ſit not on the moſt fleſhy part of the thighs, but turn them inwards, ſo as to bring in your knees and toes: and it is more ſafe to ride with the ball of the foot preſſing on the ſtirrup, than with the ſtirrup as far back as the heel; for the preſſure of the heel being in that caſe behind the ſtirrup, keeps the thighs down.

When you find your thighs thrown upwards, widen your knees to get them and the upper part of your fork lower down on the horſe. Graſp the ſaddle with the hollow or inner part of your thighs, but no more than juſt to aſſiſt the balance of your body; this will alſo enable you to keep your ſpurs from the horſe's ſides, and to bring your toes in, without that affected and uſeleſs manner of bringing them in practiſed by many. Sink your heels ſtraight down; for while your heels and thighs keep down, you cannot fall: this (aided with the bend of the back) gives the ſecurity of a ſeat, to thoſe who bear themſelves up in their ſtirrups in a ſwift gallop, or in the alternate riſing and falling in a full trot.

Let your ſeat determine the length of your ſtirrups, rather than your ſtirrups your ſeat. If more preciſion is requiſite, let your ſtirrups (in the hunting ſaddle) be of ſuch a length, as that, when you ſtand in them, there may be the breadth of four fingers between your ſeat and the ſaddle.

It would greatly aſſiſt a learner, if he would practiſe riding in a large circle, as directed ſect. ii. without ſtirrups; keeping his face looking on the outward part of the circle ſo as not to have a full view of the horſe's head, but juſt of that ear which is on the outward part of the circle; and his ſhoulder, which is towards the centre of the circle, very forward. By this means you learn to balance your body, and keep a true ſeat, independent of your ſtirrups: you may probably likewiſe eſcape a fall, ſhould you at any time loſe them by being accidentally ſhaken from your ſeat.

As the ſeat in ſome meaſure depends on the ſaddle, it may not be amiſs to obſerve, that becauſe a ſaddle with a high pommel is thought dangerous, the other extreme prevails, and the pommel is ſcarce allowed to be higher than the middle of the ſaddle. The ſaddle ſhould lie as near the back-bone as can be, without hurting the horſe; for the nearer you ſit to his back, the better ſeat you have. If it does ſo, it is plain the pommel muſt riſe enough to ſecure the withers from preſſure: therefore, a horſe, whoſe withers are higher than common, requires a higher pommel. If, to avoid this, you make the ſaddle of a more ſtraight line, the inconvenience ſpoken of follows; you ſit too much above the horſe's back, nor can the ſaddle form a proper ſeat. There ſhould be no ridge from the button at the ſide of the pommel, to the back part of the ſaddle. That line alſo ſhould be a little concave, for your thighs to lie at eaſe. In ſhort, a ſaddle ought to be, as nearly as poſſible, as if cut out of the horſe.

When you want your horſe to move forward, raiſe his head a little, and touch him gently with your whip; or elſe, preſs the calves of your legs againſt his ſides. If he does not move faſt enough, preſs them with more force, and ſo till the ſpur juſt touches him. By this practice he will (if he has any ſpirit) move upon the leaſt preſſure of the leg. Never ſpur him by a kick; but if it be neceſſary to ſpur him briſkly, keep your heels cloſe to his ſides, and ſlacken their force as he becomes obedient.

When your horſe attempts to be vicious, take each rein ſeparate, one in each hand, and advancing your arms forward, hold him very ſhort. In this caſe, it is common for the rider to pull him hard, with his arms low. But the horſe by this means having his head low too, has it more in his power to throw out his heels: whereas, if his head be raiſed very high, and his noſe thrown out a little, which is conſequent, he can neither riſe before nor behind; becauſe he can give himſelf neither of thoſe motions, without having his head at liberty. A plank placed *in equilibrio*, cannot riſe at one end unleſs it ſinks at the other.

If your horſe is headſtrong, pull not with one continued pull, but ſtop, and back him often, juſt ſhaking the reins, and making little repeated pulls till he obeys. Horſes are ſo accuſtomed to bear on the bit when they go forward, that they are diſcouraged if the rider will not let them do ſo.

If a horſe is looſe-necked, he will throw up his head at a continued pull; in which ſituation, the rider, ſeeing the front of his face, can have no power over him. When your horſe does thus, drop your hand and give the bridle play, and he will of courſe drop his head again into its proper place: while it is coming down, make a ſecond gentle pull, and you will find his mouth. With a little practice, this is done almoſt inſtantaneouſly; and this method will ſtop, in the diſtance of a few yards, a horſe, which will run away with thoſe who pull at him with all their might. Almoſt every one muſt have obſerved, that when a horſe feels himſelf pulled with the bridle, even when he is going gently, he often miſtakes what is deſigned to ſtop him, as a direction to bear on the bit and to go faſter.

Keep your horſe's head high, that he may raiſe his neck and creſt; play a little with the rein, and move the bit in his mouth, that he may not preſs on it in one conſtant and continued manner: be not afraid of raiſing his head too high; he will naturally be too ready to bring it down, and tire your arms with its weight, on the leaſt abatement of his metal. When you feel him heavy, ſtop him, and make him go back a few paces: thus you break by degrees his propenſity to preſs on his bridle.

You ought not to be pleaſed (though many are) with a round neck, and a head drawn in towards his breaſt: let your horſe carry his head bridling in, provided he carries it high, and his neck arching upwards; but if his neck bends downwards, his figure is bad, his ſight is too near his toes, he leans on the bridle, and you have no command over him. If he goes preſſing but lightly on the bridle, he is the more ſure-footed, and goes pleaſanter; as your wriſt only may guide him. If he hangs down his head, and makes you ſupport the weight of that and his neck with your arms bear-

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ing on his fore-legs, (which is called *being on his ſhoulders*), he will ſtrike his toes againſt the ground, and ſtumble.

If your horſe is heavy upon the bit, tie him every day, for an hour to two, with his tail to the manger, and his head as high as you can make him lift it, by a rein on each poſt of the ſtall, tied to each ring of the ſnaffle bit.

Horſe-breakers and grooms have a great propenſity to bring a horſe's head *down*, and ſeem to have no ſeat without a ſtrong hold by the bridle. They know indeed, that the head ſhould yield to the reins, and the neck form an arch; but do not take the proper pains to make it an arch *upward*. A temporary effect of attempting to raiſe a horſe's head, may perhaps be making him puſh out his noſe. They will here tell you, that his head is too high already; whereas it is not the diſtance from his *noſe*, but from the *top* of his head to the ground, which determines the head to be high or low. Beſides, although the fault is ſaid to be in the manner of carrying the head, it ſhould rather be ſaid to be in that of the neck; for if the neck was raiſed, the head would be more in the poſition of one ſet on a well formed neck.

The deſign therefore of lifting up the head, is to raiſe the neck, and *thereby* bring in the head; for even while the bridle makes the ſame line from the rider's hand to the bit, the horſe's noſe may be either drawn in, or thruſt out, according as his neck is raiſed or depreſſed. Inſtead of what has been here recommended, we uſually ſee colts broke with their heads caveſſoned very low, their necks ſtiff, and not in the leaſt ſuppled. When the breaking-tackle is left off, and they are mounted for the road, having more food and reſt, they frequently plunge, and a ſecond breaking becomes neceſſary. Then, as few gentlemen can manage their own horſes, they are put into the hands of grooms, from whom they learn a variety of bad habits.

If, on the other hand, your horſe carries his head (or rather his noſe) too high, he generally makes ſome amends by moving his ſhoulders lightly, and going ſafely. Attend to the cauſe of this fault. Some horſes have their necks ſet ſo low on their ſhoulders, that they bend firſt down, then upwards, like a ſtag's. Some have the upper line of their necks, from their ears to their withers, too ſhort. A head of this ſort cannot poſſibly bend inwards and form an arch, becauſe the vertebræ (or neck bones) are too ſhort to admit of flexure; for in long and ſhort necked horſes the number of the vertebræ is the ſame. In ſome, the jaw is ſo thick, that it meets the neck, and the head by this means has not room to bend. On the other hand, ſome have the under line from the jaw to the breaſt ſo ſhort, that the neck cannot riſe.

In all theſe caſes you may gain a *little* by a nice hand with an eaſy bit; but no curb, martingale, or other forcible method, will *teach* a horſe to carry his head or neck in a poſture which nature has made uneaſy to him. By trying to pull in his noſe farther than he can bear, you will add a bad habit to nature. You could not indeed *contrive* a more effectual method to make him continually toſs his noſe up, and throw his foam over you.

The rule already given to ride a looſe-necked horſe, will be a proper one for all light-mouthed horſes: one caution being added, which is, always to ſearch whether his ſaddle or girths may not in ſome way pinch him; and whether the bit may not hurt his lip by being too high in his mouth: becauſe, whenever he frets from either of theſe cauſes, his head will not be ſteady.

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It is a common cuſtom to be always pulling at the bridle, as if to ſet off to advantage either the ſpirit of the horſe, or the ſkill of the rider. Our horſes therefore are taught to hold their heads low, and pull ſo, as to bear up the rider from the ſaddle, ſtanding in his ſtirrups, even in the gentleſt gallop: how very improper this is, we are experimentally convinced, when we happen to meet with a horſe which gallops otherwiſe. We immediately ſay, *he canters excellently*, and find the eaſe and pleaſure of his motion. When horſes are deſigned for the race, and ſwiftneſs is the only thing conſidered, the method may be a good one.

It is not to be wondered that *dealers* are always pulling at their horſes; that they have the ſpur conſtantly in their ſides, and are at the ſame time continually checking the rein: by this means they make them bound, and champ the bit, while their rage has the appearance of ſpirit. Theſe people ride with their arms ſpread, and very low on the ſhoulders of their horſes: this method makes them ſtretch their necks, and gives the better appearance to their fore-heads; it conceals alſo a thick jaw, which, if the head was up, would prevent its yielding to the bit; it hides likewiſe the ewe-neck, which would otherwiſe ſhow itſelf. Indeed, if you have a horſe unſteady to the bit, formed with a natural heavy head, or one which carries his noſe obſtinately in the air, you muſt find his mouth where you can, and make the beſt of him.

Many horſes are taught to ſtart by whipping them for ſtarting. How is it poſſible they can know it is deſigned as a puniſhment? In the riding-houſe, you teach your horſe to riſe up before, and to ſpring and laſh out his hinder legs, by whipping him when tied between two pillars, with his head a little at liberty. If he underſtood this to be a puniſhment for doing ſo, he would not by that method learn to do it. He ſeems to be in the ſame manner *taught* to ſpring and fly when he is frightened. Moſt horſes would go quietly paſt an object they were beginning to fly from, if their riders, inſtead of gathering up their bridles, and ſhowing themſelves ſo ready, ſhould throw the reins looſe upon their necks.

When a horſe ſtarts at any thing on one ſide, moſt riders turn him out of the road, to make him go up to what he ſtarts at: if he does get the better of his fear, or readily comply, he generally goes paſt the object, making with his hinder parts, or croup, a great circle of the road; whereas, he ſhould learn to keep ſtraight on, without minding objects on either ſide.

If he ſtarts at any thing on the left, hold his head high, and keep it ſtraight in the road, pulling it *from* looking at the thing he ſtarts at, and keeping your right leg hard preſſed againſt his ſide, towards his flank: he will then go ſtraight along the road. By this method, and by turning his head a little more, he may be forced with his croup cloſe up to what frightened him; for as his head is pulled one way, his croup neceſſarily turns the other. Always avoid a

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quarrel with your horſe, if you can: if he is apt to ſtart, you will find occaſions enough to exerciſe his obedience, when what he ſtarts at lies directly in his way, and you *muſt* make him paſs; if he is not ſubject to ſtart, you ſhould not quarrel with him about a trifle.

It muſt be obſerved, therefore, that this rule in going paſt an object may perhaps be a little irregular in a managed horſe, which will always obey the leg: but even ſuch a horſe, if he is really afraid, and not reſtive, it may not be amiſs to make him look another way; unleſs the object be ſomething you would particularly accuſtom him to the ſight of.

The caſe will alſo be different with a horſe whoſe fear is owing to his being not uſed to objects; but ſuch a one is not to be rode by any horſeman to whom theſe rules are directed: the ſtarting here meant ariſes merely from the horſe's being pamper'd, and ſpringing through livelineſs.

The notion of the neceſſity of making a horſe go immediately up to every thing he is afraid of, and not ſuffering him to become maſter of his rider, ſeems to be in general carried too far. It is an approved and good method to conquer a horſe's fear of the ſound of a drum, by beating one near to him at the time of feeding him: this not only familiarizes the noiſe to him, but makes it pleaſant, as a fore-runner of his meat*; whereas, if he was whipped up to it, he might perhaps ſtart at it as long as he lived. Might not this be applied to his ſtarting at other things, and ſhow that it would be better to ſuffer him (provided he does not turn back) to go a little from and avoid an object he has a diſlike to, and to accuſtom him to it by degrees, convincing him, as it were, that it will not hurt him; than to puniſh him, quarrel with him, and perhaps ſubmit to his will at laſt, while you inſiſt on his overcoming his fear in an inſtant? If he ſees a like object again, it is probable he will recollect his dread, and arm himſelf to be diſobedient.

We are apt to ſuppoſe that a horſe fears nothing ſo much as his rider: but may he not in many circumſtances, be afraid of inſtant deſtruction? of being cruſhed? of being drowned? of falling down a precipice? Is it a wonder that a horſe ſhould be afraid of a loaded waggon? may not the hanging load ſeem to threaten the falling on him? there cannot be a rule more general, than, in ſuch a caſe, to ſhow him there is room for him to paſs. This is done by turning his head a very little from the carriage, and preſſing your leg, which is fartheſt from it, againſt his ſide.

A horſe is not to ſtop without a ſign from his rider.—Is it not then probable, that when driven up to a carriage he ſtarts at it, he conceives himſelf obliged either to attack or run againſt it? Can he underſtand the rider's ſpurring him with his face directed to it, as a ſign for him to paſs it? That a horſe is eaſily alarmed for his face and eyes (he will even catch back his head from a hand going to careſs him); that he will not go with any force, face to face, even to another horſe (if in his power to ſtop); and that he ſees perfectly ſideways,—may be uſeful hints for the treatment of horſes with regard to ſtarting.

Though you ought not to whip a horſe for ſtarting, there can be no good effect from clapping his neck with your hand to encourage him. If one took any notice of his ſtarting, it ſhould be rather with ſome tone of voice which he uſually underſtood as an expreſſion of diſlike to what he is doing; for there is *oppoſition* mixed with his ſtarting, and a horſe will ever repeat what he finds has foiled his rider.

Notwithſtanding the directions above given, of not preſſing a horſe up to a carriage he ſtarts at; yet if one which you apprehend will frighten him meets you at a narrow part of the road, when you have once let him know he is to paſs it, be ſure you remain determined and preſs him on. Do this more eſpecially when part of the carriage has already paſſed you: for if, when he is frightened, he is accuſtomed to go back, and turn round, he will certainly do it if he finds, by your hand ſlackening, and legs not preſſing, that you are irreſolute; and this at the moſt dangerous point of time, when the wheels of the carriage take him as he turns. Remember not to touch the curb rein at this time; it will certainly check him. It is not known to every one, that the perſon who would lead a horſe by the bridle, ſhould not turn his face to him when he refuſes to follow him: if, beſides this, he raiſes his arms, ſhows his whip, or pulls the bridle with jerks, he frightens the horſe, inſtead of perſuading him to follow; which a little patience may bring about.

Ride with a ſnaffle; and uſe your curb, if you have one, only occaſionally. Chooſe your ſnaffle full and thick in the mouth, eſpecially at the ends to which the reins are faſtened. Moſt of them are made too ſmall and long; they cut the horſe's mouth, and bend back over the bars of his jaw, working like pincers.

The management of the curb is too nice a matter to enter on here, farther than to preſcribe great caution in the uſe of it: a turn of the wriſt, rather than the weight of your arm, ſhould be applied to it. The elaſticity of a rod, when it hath hooked a fiſh, may give you ſome idea of the proper play of a horſe's head on his bridle; his ſpirit and his pliableneſs are both marked by it.

A horſe ſhould never be put to do any thing in a curb which he is not ready at: you may force him, or pull his head any way with a ſnaffle; but a curb acts only in a ſtraight line. It is true, that a horſe will be turned out of one track into another by a curb, but it is becauſe he knows it as a *ſignal*. When he is put to draw a chair, and does not underſtand the neceſſity he is then under of taking a larger ſweep when he turns, you frequently ſee him *reſtive*, as it is then called: but put him on a ſnaffle, or buckle the rein to that part of the bit which does not curb him; and the horſe ſubmits to be pulled about, till he underſtands what is deſired of him. Theſe directions ſuppoſe your horſe to have ſpirit, and a good mouth: if he has not, you muſt take him as he is, and ride him with ſuch a bit as you find moſt eaſy to yourſelf.

When you ride a journey, be not ſo attentive to your horſe's nice carriage of himſelf, as to your encouragement of him, and keeping him in good humour. Raiſe his head; but if he flags, you may indulge him with bearing a little more upon the bit than you would ſuffer in an airing. If a horſe is lame, tender-footed, or tired, he naturally hangs upon his bridle.

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* See ſect. v.

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On a journey, therefore, his mouth will depend greatly on his ſtrength and the goodneſs of his feet. Be then very careful about his feet, and let not a farrier ſpoil them. You will be enabled to keep them from danger, by the directions given under the article Farriery, p. 167.

Very few, although practiſed in riding, know they have any power over a horſe but by the bridle; or any uſe for the ſpur, except to make him go forward. A little experience will teach them a farther uſe. If the left ſpur touches him (and he is at the ſame time prevented from going forward), he has a ſign, which he will ſoon underſtand, to move ſideways to the right. In the ſame manner to the left, if the right ſpur is cloſed to him: he afterwards, through fear of the ſpur, obeys a touch of the leg; in the ſame manner as a horſe moves his croup from one ſide of the ſtall to the other, when any one ſtrikes him with his hand. In ſhort, his croup is guided by the leg, as his head is by the bridle. He will never diſobey the leg, unleſs he becomes reſtive. By this means you will have a far greater power over him: he will move ſideways, if you cloſe one leg to him; and ſtraight forward, if both: even when he ſtands ſtill, your legs held near him will keep him on the watch; and with the ſlighteſt, unſeen motion of the bridle upwards, he will raiſe his head, and ſhow his forehead to advantage.

On this uſe of the legs of the rider, and guidance of the croup of the horſe, are founded all the *airs* (as the riding-maſters expreſs themſelves) which are taught in the manege; the paſſage, or ſide-motion of troopers to cloſe or open their files, and indeed all their evolutions. But the convenience of ſome degree of this diſcipline for common uſe is the reaſon of mentioning it here. It is uſeful if a horſe is apt to ſtumble or ſtart. If to the firſt, by preſſing your legs to his flank, and keeping up his head, he is made to go light on his fore-legs, which is aiding and ſupporting him; and the ſame if he does actually ſtumble, by helping him at the very inſtant to exert himſelf, while as yet any part of him remains not irrecoverably impreſſed with the precipitate motion. Hence this uſe of the hand and legs of the rider is called *giving aids* to a horſe; for, as the holding up the weight of a heavy unactive horſe, by mere pulling, it is as impoſſible as to recover him when falling down a precipice.

A horſe is ſupported and helped by the hands and legs of his rider in every action they require of him; hence he is ſaid to perform his *airs* by the *aids* from his rider.

The ſame manner is uſeful if a horſe ſtarts. For if when he is beginning to fly to one ſide, you leg on the ſide he is flying to, he ſtops his ſpring immediately. He goes paſt what he ſtarted at, keeping ſtraight on, or as you chooſe to direct him; and he will not fly back from any thing if you preſs him with both legs. You keep his haunches under him, going down a hill; help him on the ſide of a bank; more eaſily avoid the wheel of a carriage; and approach more gracefully and nearer to the ſide of a coach or horſeman. When a pampered horſe curvets irregularly, and twiſts his body to and fro, turn his head either to the right or left, or both alternately (but without letting him move out of the track), and preſs your leg to the oppoſite ſide: your horſe cannot then ſpring on his hind-legs to one ſide, becauſe your leg prevents him; nor to the other, becauſe his head looks that way, and a horſe does not ſtart and ſpring to the ſide on which he looks. Here it may not be amiſs to obſerve the impropriety of the habit which many riders have, of letting their legs ſhake againſt the ſides of the horſe: if a horſe is taught, they are then continually preſſing him to violent action; and if he is not, they render him inſenſible and incapable of being taught. The fretting of a hot horſe will hence be exceſſive, as it can no otherwiſe be moderated than by the utmoſt ſtillneſs of the ſeat, hands, and legs of the rider.

Colts at firſt are taught to *bear* a bit, and by degrees to *pull* at it. If they did not preſs it, they could not be guided by it. By degrees they find their necks ſtronger than the arms of a man; and that they are capable of making great oppoſition, and often of foiling their riders. Then is the time to make them ſupple and pliant in every part. The part which of all others requires moſt this pliancy is the neck. Hence the metaphor of *ſtiff-necked* for *diſobedient*. A horſe cannot move his head but with the muſcles of his neck: this may be called his *helm*; it guides his courſe, changes and directs his motion.

The uſe of this pliancy in the different parts and limbs of a horſe has been already ſhown in a former ſection. The preſent ſection being directed to the *unexperienced* horſeman, it may ſuffice to add, that *his* idea of ſuppleneſs need only be, that of an ability and readineſs in a horſe to move every limb, on a ſign given him by the hands or legs of his rider; as alſo, to bend his body, and move in a ſhort compaſs, quick and collected within himſelf, ſo as inſtantly to be able to perform any other motion.

Horſham.

HORSHAM, a town of Suſſex, ſeated near St Leonard's foreſt, 38 miles from London. It has its name from Horſa, brother to Hengiſt the Saxon; and is one of the largeſt towns in the county. It has ſent members to parliament ever ſince the 30th of Edward I. and is the place where the county-gaol is held, and often the aſſizes. It is a borough by preſcription, with the title of two bailiffs and burgage holders within and without the borough, &c. who elect the members of parliament, and they are returned by the bailiffs choſe yearly by a court-leet of the lord of the manor, who return four candidates to the ſteward, and he nominates two of them for the office. Here is a very fine church, and a well endowed free-ſchool. Great ſtore of poultry is bought up for London at its market on Saturday, and it has a patent alſo for a monthly market.

Horſtius.

HORSTIUS (James), profeſſor of medicine in the univerſity of Helmſtadt, in the 16th century. He joined devotion with the knowledge and practice of phyſic. He carefully prayed to God to bleſs his preſcriptions, and publiſhed a form of prayer upon this ſubject. He alſo wrote, 1. A treatiſe on the qualities of a good phyſician. 2. Another on the qualities of a good apothecary. 3. A treatiſe on the plague, in German. 4. A commentary *in libros Hippocratis de corde*, and other works.

HORSTIUS (Gregory), nephew of the former, called *the Æſculapius of Germany*, publiſhed ſeveral books, which are eſteemed.

HORTAGILERS, in the grand ſignior's court, upholſterers, or tapeſtry-hangers. The grand ſignior has conſtantly 400 in his retinue when he is in the camp: theſe go always a day's journey before him, to fix upon a proper place for his tent, which they prepare firſt; and afterwards thoſe of the officers, according to their rank.

HORTENSIUS (Quintus), a celebrated Roman orator, the cotemporary of Cicero, pleaded with univerſal applauſe at 19 years of age, and continued the ſame profeſſion during 48 years. But being at laſt eclipſed by Cicero, he quitted the bar, and embraced a military life; became a military tribune, prætor, and afterwards conſul, about 70 B. C. Cicero ſpeaks of him in ſuch a manner as makes us regret the loſs of his orations. Hortenſius had a wonderful memory, and delivered his orations without writing down a ſingle word, or forgetting one particular that had been advanced by his adverſaries. He died very rich, a little before the civil war, which he had endeavoured by all poſſible means to prevent.

HORTUS SICCUS, a DRY GARDEN; an appellation given to a collection of ſpecimens of plants, carefully dried and preſerved.

The value of ſuch a collection is very evident, ſince 1000 minutiæ may be preſerved in the well dried ſpecimens of plants, which the moſt accurate engraver will overlook. We ſhall therefore give two methods of drying and preſerving a *hortus ſiccus*: the firſt by Sir Robert Southwell in Philoſophical Tranſactions, n° 237; and the other by Dr Hill, in his review of the works of the Royal Society, with his objections to Sir Robert's method.

According to the former gentleman, the plants are to be laid flat between papers, and then put between two ſmooth plates of iron, ſcrewed together at the corners; and in this condition committed to a baker's oven for two hours. When taken out, they are to be rubbed over with a mixture of equal parts of aquafortis and brandy; and after this to be faſtened down on paper with a ſolution of the quantity of a walnut of gum tragacanth diſſolved in a pint of water. See HERBAL.

To this the Doctor objects, that the heat of an oven is much too uncertain to be employed in ſo nice an operation; and that the ſpace of time ordered for continuing the plants in it is of no information, unleſs the degree of heat, and even the different nature of the plant as to its ſucculency and the firmneſs or tendency of its fibres, be attended to; there being ſcarcely any two plants alike in theſe particulars: conſequently the degree and duration of heat ſufficient for one plant would deſtroy another. Beſides which, the acid uſed deſtroys the colour of many plants; and never recovers that of others loſt in the drying; and frequently after the plant is fixed down, rots both the paper it is fixed to, and that which falls over it. Dr Hill's method is as follows. Take a ſpecimen of a plant in flower, and with it one of its bottom leaves if it have any; bruiſe the ſtalk if too rigid, or ſlit it if too thick: ſpread out the leaves and flowers on paper, cover it with more paper, and lay a weight over all. At the end of 18 hours take out the plants, now perfectly flattened, and lay them on a bed of dry common ſand; ſift more dry ſand over them to the depth of two inches, and thus let them lie about three weeks: the leſs ſucculent dry much ſooner, but they take no harm afterward. If the floor of a garret be covered in ſpring with ſand two inches deep, leaving ſpace for walking to the ſeveral parts, it will receive the collection of a whole ſummer; the covering of ſand being ſifted over every parcel as laid in, they need no farther care from the time of laying them till they are taken up to be ſtuck on paper. The cement uſed by the Doctor is thus prepared: early in the ſpring put two ounces of camphor into three quarts of water in a large bottle, ſhake it from time to time, and when the firſt collected plants are ready for the faſtening down, put into a pint of the water, poured off into an earthen veſſel that will bear the fire, two ounces of common glue, ſuch as is uſed by the carpenters, and the ſame quantity of ichthyocolla beat to ſhreds; let them ſtand 36 hours, then gently boil the whole a few moments, and ſtrain it off through a coarſe cloth; this is to be warmed over a gentle heat when it is to be uſed, and the back of the plants ſmeared over with a painter's bruſh: after this lay them on paper, and gently preſs them for a few minutes, then expoſe them to the air a little; and finally, lay them under a ſmall weight between quires of paper to be perfectly dried.

It is ſcarce to be conceived how ſtrongly the water becomes impregnated with the camphor by this ſingle proceſs: a part of it indeed flies off in the making of the cement and the uſing of it: but enough remains with the plants to prevent the breeding of inſects in it. He farther obſerves, that plants may be dried very well without ſand, by only putting them frequently into freſh quires of paper, or a few, by only preſſing them between the leaves of a book: but the ſand method preſerves the colour beſt, and is done with leaſt trouble.

Another method much better than that of the oven is the flattening and drying the plant by paſſing a common ſmoothing iron for linen over the papers between which it is laid: but for nice things the moſt perfect of all methods is that by a common ſand heat, ſuch as is uſed for chemical purpoſes. The cold ſand is to be ſpread ſmooth upon this occaſion, the plant laid on it carefully flatted, and a thick bed of ſand ſifted over: the fire is then to be made, and the whole proceſs carefully watched until by a very gentle heat the plant be carefully dried. The colour of the tendereſt herb may by this manner be preſerved; and flowers, that can no way elſe be preſerved, may be managed perfectly well thus.

HORUS, a renowned deity of ancient Egypt. He was an emblem of the ſun. Plutarch (in his treatiſe *de Iſide et Oſiride*) ſays, "that virtue which preſides over the ſun, whilſt he is moving through ſpace, the Egyptians called *Horus* and the Greeks *Apollo*." Job alſo calls *Ur* or *Orus* the ſun—" If I gazed upon the ſun (*Ur, Orus*) when he was ſhining, or on *(Jārĕcha)* the moon walking in brightneſs, and my heart hath been ſecretly enticed (*i. e.* to worſhip), or my mouth hath kiſſed my hand; this alſo were an iniquity to be puniſhed by the judge, for I ſhould have denied the God who is above." Chap. xxxi. ver. 26, 27, 28.

The interpretation left by Hermapion of the hieroglyphics engraved on the obeliſk of Heliopolis (according to Ammianus Marcellinus), offers theſe remarkable words: " Horus is the ſupreme lord and author of time." Theſe qualities, it is known, were chiefly attributed to Oſiris: that they may apply, therefore, to Horus, he muſt neceſſarily denote the ſtar of the day in certain circumſtances; and this is what is explained to us by the oracle of Apollo of Claros:

> Learn that the firſt of the gods is Jao.
> He is called *inviſible* in winter, Jupiter in the ſpring,
> The *ſun* in ſummer, and towards the end of autumn the tender *Jao*.

The ſtar of the day, on attaining the ſummer ſolſtice, and called *per excellentiam*. The ſun, is the ſame as Horus. In fact, the Egyptians repreſented him borne on lions, which ſignified his entrance into the ſign of the lion. They who preſided over the divine inſtitutions, then placed ſphynxes at the head of the canals and ſacred fountains, to warn the people of the approaching inundation. Macrobius †, who informs us why the Greeks gave Horus the name of Apollo, confirms this ſentiment: "In their myſteries (ſays he) they diſcover as a ſecret, which ought to be inviolable, that the ſun arrived in the upper hemiſphere, is called Apollo." Theſe teſtimonies concur in proving, that the emblematical deity was no other than the ſtar of day, paſſing through the ſigns of ſummer.

Theſe lights may lead us to the explication of the ſacred fable, which the prieſts publiſhed on the ſubject of Horus; for they enveloped in myſtery every point of their religion. Plutarch gives it at length in his treatiſe of Iſis and Oſiris: Of which the following are the principal traits. They ſaid that he was the ſon of Oſiris and of Iſis; that Typhon, after killing his brother Oſiris, took poſſeſſion of the kingdom; that Horus, leaguing himſelf with Iſis, avenged the death of his father, expelled the tyrant from his throne without depriving him of life, and reigned glorioufly in Egypt. A perſon who has travelled ever ſo little in Egypt, eaſily diſcovers natural phenomena hid under the veil of fable. In the ſpring, the wind khamſin frequently makes great ravages there. It raiſes whirlwinds of burning ſands, which ſuffocate travellers, darken the air, and cover the face of the ſun in ſuch a manner as to leave the earth in perfect obſcurity. Here is the death of Oſiris and the reign of Typhon. Theſe hurricanes break looſe uſually in the months of February, March, and April. When the ſun approaches the ſign of the lion, he changes the ſtate of the atmoſphere, diſperſes theſe tempeſts, and reſtores the northerly winds, which drive before them the malignant vapours, and preſerve in Egypt coolneſs and ſalubrity under a burning ſky. This is the triumph of Horus over Typhon and his glorious reign. As the natural philoſophers acknowledge the influence of the moon over the ſtate of the atmoſphere, they united her with this god, to drive the uſurper from the throne. The prieſts conſidering Oſiris as the father of time, might beſtow the name of his ſon on Horus, who reigned three months in the year. This, according to Mr Savary †, is the natural explication of this allegory. And all enlightened men, he thinks, muſt have underſtood this language, which was familiar to them. The people only, whoſe feeble ſight extends no farther than the exterior, without diving into the true meaning of things, might regard theſe allegorical perſonages as real gods, and decree prayers and offerings to them.

Jablonſki, who has interpreted the epithet of Arueri, which the Egyptians gave to Horus, pretends that it ſignifies *efficacious virtue*. Theſe expreſſions perfectly characteriſe the phenomena which happened during the reign of this god. It is in ſummer, in fact, that the ſun manifeſts all its power in Egypt. It is then that he ſwells the waters of the river with rains, exhaled by him in the air, and driven againſt the ſummits of the Abyſſinian mountains; it is then that the huſbandman reckons on the treaſures of agriculture. It was natural for them to honour him with the name of *Arueri*, or *efficacious virtue*, to mark theſe auſpicious effects.

HOSANNA, in the Hebrew ceremonies, a prayer which they rehearſed on the ſeveral days of the feaſt of tabernacles. It was thus called, becauſe there was frequent repetitions therein of the word הךשענא, *ſerva nunc*, or *ſerva precor*; i. e. ſave us now; or, ſave us, we pray.

There are divers of theſe hoſannahs. The Jews call the *hoſchannoth*; i. e. the *hoſannahs*. Some are rehearſed on the firſt day, others on the ſecond, &c. which they call *hoſanna* of the firſt day, *hoſanna* of the ſecond day, &c.

Hosanna Rabba, or Grand Hoſanna, is a name they give to their feaſt of tabernacles, which laſts eight days; becauſe, during the courſe thereof, they are frequently calling for the aſſiſtance of God, the forgiveneſs of their ſins, and his bleſſing on the new year; and to that purpoſe they make great uſe of the hoſchannoth, or prayers abovementioned.—The Jews alſo apply the term *hoſanna rabba*, in a more peculiar manner, to the ſeventh day of the feaſt of tabernacles; becauſe they apply themſelves more immediately on that day to invoke the divine bleſſing, &c.

HOSCHIUS (Sidronius), a jeſuit, who was born at Marke, in the dioceſe of Ypres, in 1596, and died at Tongres in 1653. He wrote ſome elegies and other poems in Latin with great purity and elegance.

HOSE, from the Saxon *Hoſa*, a ſtocking. See Stocking.

HOSEA, a canonical book of the Old Teſtament, ſo called from the prophet of that name, its author, who was the ſon of Beri, and the firſt of the leſſer prophets. He lived in the kingdom of Samaria, and delivered his propheſies under the reign of Jeroboam II. and his ſucceſſors, kings of Iſrael; and under the reigns of Uzziah, Jotham, Ahaz, and Hezekiah, kings of Judah. His principal deſign is to publiſh the groſs idolatries of the people of Iſrael and Judah, to denounce the divine vengeance againſt them, and to foretel the captivity in Aſſyria.

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† *Saturnal*, lib. 1

† *Letters on Egypt*, II. 403.

HOSPINIAN (Rodolphus), one of the greateſt writers that Switzerland has given birth to. He was born in 1547, at Altorf near Zurich; obtained the freedom of Zurich; and was made proviſor of the abbey-ſchool. Notwithſtanding this employment, he undertook a noble work of vaſt extent, which was a *Hiſtory of the Errors of Popery.* Though he could not complete this work according to his plan, he publiſhed ſome conſiderable parts of it: what he publiſhed on the Euchariſt, and another work called *Concordia Diſcors,* exceedingly exaſperated the Lutherans. He did not reply to them; but turning his arms againſt the Jeſuits, publiſhed *Hiſtoria Jeſuitica,* &c. Theſe writings gained him preferment; he being appointed archdeacon of Caroline church, and then miniſter of the abbey-church. He died in 1626; and there was an edition of his works publiſhed at Geneva 1681, in ſeven volumes in folio.

HOSPITAL, popularly Spittal, a place or building erected, out of charity, for the reception and ſupport of the poor, aged, infirm, ſick, and otherwiſe helpleſs. The word is formed of the Latin *hoſpes,* "hoſt, ſtranger." See Host.

In the firſt ages of the church, the biſhop had the immediate charge of all the poor, both ſound and diſeaſed, as alſo of widows, orphans, ſtrangers, &c.—When the churches came to have fixed revenues allotted them, it was decreed, that at leaſt one fourth part thereof ſhould go to the relief of the poor; and to provide for them the more commodiouſly, divers houſes of charity were built, which are ſince denominated *hoſpitals.* They were governed wholly by the prieſts and deacons, under the inſpection of the biſhop. In courſe of time, ſeparate revenues were aſſigned for the hoſpitals; and particular perſons, out of motives of piety and charity, gave lands and money for erecting of hoſpitals. When the church diſcipline began to relax, the prieſts, who till then had been the adminiſtrators of hoſpitals, converted them into a ſort of benefices, which they held at pleaſure, without giving account thereof to any body; reſerving the greateſt part of the income to their own uſe; ſo that the intentions of the founders were fruſtrated.—To remove this abuſe, the council of Vienne expreſsly prohibited the giving any hoſpital to ſecular prieſts in the way of a benefice; and directed the adminiſtration thereof to be given to ſufficient and reſponſible laymen, who ſhould take an oath, like that of tutors, for the faithful diſcharge thereof, and be accountable to the ordinaries.—This decree was executed and confirmed by the council of Trent.

In Britain, hoſpitals are buildings properly endowed, or otherwiſe ſupported by charitable contributions, for the reception and ſupport of the poor, aged, infirm, ſick, or helpleſs.

A charitable foundation laid thus for the ſuſtenance and relief of the poor, is to continue for ever. Any perſon ſeized of an eſtate in fee, may, by deed inrolled in chancery, erect and found an hoſpital, and nominate ſuch heads and governors therein as he ſhall think fit; and this charitable foundation ſhall be incorporated, and ſubject to the inſpection and guidance of the heads and viſitors nominated by the founder. Likewiſe ſuch corporations ſhall have, take, and purchaſe lands, ſo as not to exceed 200l. a year, provided the ſame be not held of the king; and to make leaſes, reſerving the accuſtomed yearly rent. See Corporation.

HOSPITAL (Michael de l'), chancellor of France in the 16th century, was one of the greateſt men of his age, and had raiſed himſelf by degrees. He agreed to an edict much ſeverer againſt the Proteſtants than he could have wiſhed, to prevent the introduction of the inquiſition. It was that of Romorantin. The ſpeeches he made, in order to inſpire a ſpirit of toleration, made him much ſuſpected by the Roman Catholics, and extremely odious to the court of Rome. The maxims of ſtate upon which he regulated himſelf were of great advantage to France, ſince he formed ſome diſciples who oppoſed, in proper time, the pernicious attempts of the leaguers, and rendered them abortive.—His pacific views being diſliked by Catharine de Medicis, who had contributed to his advancement, ſhe excluded him from the council of war, and occaſioned his diſgrace. He retired, however, of his own accord, in 1568; and ſpent the reſt of his life at his country-ſeat at Vignai, where he died in 1573, aged 68. His poems are eſteemed. He alſo publiſhed ſome excellent ſpeeches and memoirs.

Hospital (William-Francis-Antony, marquis of), a great mathematician of France, was born of an ancient family in 1661. He was a geometrician almoſt from his infancy; for one day being at the duke of Rohan's, where ſome able mathematicians were ſpeaking of a problem of Paſchal's which appeared to them extremely difficult, he ventured to ſay, that he believed he could ſolve it. They were amazed at ſuch preſumption in a boy of 15, for he was then no more; nevertheleſs, in a few days he ſent them the ſolution. He entered early into the army, and was a captain of horſe; but being extremely ſhort-ſighted, and expoſed on that account to perpetual inconveniences and errors, he at length quitted the army, and applied himſelf entirely to his favourite amuſement. He contracted a friendſhip with Malbranche, and took his opinion upon all occaſions. In 1693, he was received an honorary member of the academy of ſciences at Paris; and he publiſhed a work upon Sir Iſaac Newton's calculations, intitled, *L'Analyſe des infinimens petis.* He was the firſt in France who wrote upon this ſubject; and on this account was regarded almoſt as a prodigy. He engaged afterwards in another work of the mathematical kind, in which he included *Les Sectiones Coniques, les Lieux Geometriques, la Conſtruction des Equations, et Une Theorie des Courbes Mechaniques:* but a little before he had finiſhed it, he was ſeized with a fever, of which he died Feb. 2. 1704, aged 43. It was publiſhed after his death.

HOSPITALITY, the practice of entertaining ſtrangers. Dr Robertſon, ſpeaking of the middle ages, ſays, "Among people whoſe manners are ſimple, and who are ſeldom viſited by ſtrangers, hoſpitality is a virtue of the firſt rank. This duty of hoſpitality was ſo neceſſary in that ſtate of ſociety which took place during the middle ages, that it was not conſidered as one of thoſe virtues which men may practiſe or not, according to the temper of their minds and the generoſity of their hearts. Hoſpitality was enforced by ſtatutes, and thoſe who neglected the duty were liable to puniſhment. The laws of the Slavi ordained that the moveables of an inhoſpitable perſon ſhould be confiſcated, and his houſe burnt. They were even ſo ſolicitous for the entertainment of ſtrangers, that they permitted the landlord to ſteal for the ſupport of his gueſt."

The hoſpitality of the ancient Britiſh particularly of the great and opulent barons, hath been much admired, and conſidered as a certain proof of the nobleneſs and generoſity of their ſpirits. The fact is well atteſted. The caſtles of the powerful barons were capacious palaces, daily crouded with their numerous retainers, who were always welcome to their plentiful tables. They had their privy counſellors, their treaſurers, marſhals, conſtables, ſtewards, ſecretaries, chaplains, heralds, purſuivants, pages, henſhmen or guards, trumpeters, minſtrells, and in a word all the officers of a royal court. The etiquette of their families was an exact copy of the royal houſehold; and ſome of them lived in a degree of pomp and ſplendor little inferior to that of the greateſt kings. Richard Neville, earl of Warwick, we are told, "was ever had in great favour of the commons of the land, becauſe of the exceeding houſehold which he daily kept in all countries whether he ſojourned or lay: and when he came to London, he held ſuch an houſe, that ſix oxen were eaten at a breakfaſt; and every tavern was full of his meat." The earls of Douglas in Scotland, before the fall of that great family, rivalled or rather exceeded their ſovereigns in pomp and profuſe hoſpitality. But to this manner of living, it is highly probable theſe great chieftains were prompted by a deſire of increaſing the number and attachment of their retainers, on which, in thoſe turbulent times, their dignity and even their ſafety, depended, as much as to the innate generoſity of their tempers. Thoſe retainers did not conſtantly reſide in the families of their lords; but they wore their liveries and badges, frequently feaſted in their halls, ſwelled their retinues on all great ſolemnities, attended them in their journeys, and followed them into the field of battle. Some powerful chieftains had ſo great a number of theſe retainers conſtantly at their command, that they ſet the laws at defiance, were formidable to their ſovereigns, and terrible to their fellow-ſubjects; and ſeveral laws were made againſt giving and receiving liveries. But theſe laws produced little effect in this period.

Hoſpitality was not confined to the great and opulent, but was practiſed rather more than it is at preſent by perſons in the middle and lower ranks of life. But this was owing to neceſſity, ariſing from the ſcarcity of inns, which obliged travellers and ſtrangers to apply to private perſons for lodging and entertainment; and thoſe who received them hoſpitably acquired a right to a ſimilar reception. This was evidently the caſe in Scotland in the firſt part of this period. James I. A. D. 1424, procured the following act of parliament. "It is ordainit, that all burrow-townis, and throuchfaris quhair commoun paſſages ar, that thair be ordaint hoſtillaries and reſettis, havand ſtables and chalmers; and that men find with thame bread and aill, and all uther fude, alſweil for horſe as men, for reſonable price." But travellers had been ſo long accuſtomed to lodge in private houſes, that theſe public inns were quite neglected; and thoſe who kept them preſented a petition to parliament, complaining, "That the liegis travelland in the realme, quhen they cum to burrowis and throuchfaris, herberis thame not in hoſtillaries, bot with their acquaintance and friendis." This produced an act prohibiting travellers to lodge in private houſes where there were hoſtalries, under the penalty of 40 s. and ſubjecting thoſe who lodged them to the ſame penalty.

The inhabitants of the Highlands and Weſtern Iſles of Scotland were remarkable for their hoſpitality and kindneſs to ſtrangers, and ſtill retain the ſame diſpoſition. See HIGHLANDERS.

HOSPITALLERS, HOSPITALARII, an order of religious knights, who built an hoſpital at Jeruſalem, wherein pilgrims were received. To theſe pope Clement V. transferred the effects and revenues of the Templars; whom by a council held at Vienne, he ſuppreſſed for their many and great miſdemeanours. Theſe hoſpitallers were otherwiſe called *Knights of St John of Jeruſalem;* and are the ſame with thoſe whom we now call *Knights of Malta.*

HOSPITIUM, a term uſed in old writers either for an inn or a monaſtery, built for the reception of ſtrangers and travellers. See INN and MONASTERY.

HOSPODAR, a title borne by the princes of Walachia and Moldavia, who receive the inveſtiture of their principalities from the grand ſignior. He gives them a veſt and ſtandard; they are under his protection, and obliged to ſerve him, and he even ſometimes depoſes them; but in other reſpects they are abſolute ſovereigns within their own dominions.

HOST, HOSPES, a term of mutual relation, applied both to a perſon who lodges and entertains another, and to the perſon thus lodged, &c.—The word is formed of the Latin *hoſpes,* which ſome will have thus called *quaſi hoſtium* or *oſtium petens;* for *oſtium* was anciently written with an aſpirate.—Thus the inn-keeper ſays, he has a good *hoſt,* in ſpeaking of the traveller who lodges with him: and the traveller, again ſays, he has a kind *hoſt,* in ſpeaking of his landlord.

It muſt be obſerved then, that it was the cuſtom among the ancients, when any ſtranger aſked for lodging, for the maſter of the houſe, and the ſtranger, each of them to ſet a foot on their own ſide of the threſhold, and ſwear they would neither of them do any harm to the other. It was this ceremony that raiſed ſo much horror againſt thoſe who violated the law or right of hoſpitality on either ſide; inaſmuch as they were looked on as perjured.

Inſtead of *hoſpes,* the ancient Latins called it *hoſtis;* as Cicero himſelf informs us: though in courſe of time, *hoſtis* came to ſignify an enemy; ſo much was the notion of hoſpitality altered.

HOST is alſo uſed by way of abbreviation for *hoſtia,* a victim or ſacrifice offered to the Deity. In this ſenſe, *hoſt* is more immediately underſtood of the perſon of the Word incarnate, who was offered up an hoſt or *hoſti* to the Father on the croſs for the ſins of mankind. See HOSTIA.

HOST, in the church of Rome, a name given to the elements uſed in the euchariſt, or rather to the conſecrated wafer; which they pretend to offer up every day a new hoſt or ſacrifice for the ſins of mankind. They pay adoration to the hoſt, upon a falſe preſumption that the elements are no longer bread and wine, but tranſubſtantiated into the real body and blood of Chriſt. See TRANSUBSTANTIATION.—Pope Gregory IX. firſt decreed a bell to be rung, as the ſignal for the people to betake themſelves to the adoration of the hoſt.—The veſſel wherein the hoſts are kept is called the *cibory*; being a large kind of covered chalice.

HOSTAGE, a perſon given up to an enemy as a ſecurity for the performance of the articles of a treaty.

HOSTIA, HOST, in antiquity, a victim offered in ſacrifice to a deity.

The word is formed from *hoſtis*, "enemy:" it being the cuſtom to offer up a ſacrifice before they joined battle, to render the gods propitious; or, after the battle was over, to give them thanks. Some chooſe to derive the word from *hoſtio*, q. d. *ferio*, "I ſtrike." Iſidore on this word remarks, that the name *hoſtia* was given to thoſe ſacrifices which they offered before they marched to attack an enemy, (*antequam ad hoſtem pergerent*); in contradiſtinction from *victima*, which were properly thoſe offered after the victory.

Hoſtia alſo ſignified the leſſer ſorts of ſacrifice, and *victima* the larger. A. Gellius ſays, that every prieſt indifferently, might ſacrifice the *hoſtia*, but that the *victima* could be offered by none but the conqueror himſelf. But after all, we find theſe two words promiſcuouſly uſed one for the other by ancient writers. We read of many kinds of *hoſtiæ*: as *hoſtiæ puræ*, which were pigs or lambs ten days old; *hoſtiæ præcidaneæ*, ſacrifices offered the day before a ſolemn feaſt; *hoſtiæ bidentes*, ſacrifices of ſheep or other animals of two years old; *hoſtiæ eximiæ*, a ſacrifice of the flower of the flock; *hoſtiæ ſuccedaneæ*, ſacrifices offered after others which had exhibited ſome ill omen; *hoſtiæ ambarvales*, victims ſacrificed after having been ſolemnly led round the fields at the *ambarvalia*; *hoſtiæ amburbiales*, victims ſlain after the *amburbium*; *hoſtiæ caneares* or *caviares*, victims ſacrificed every fifth year by the college of pontiffs, in which they offered the part of the tail called *caviar*; *hoſtiæ prodigiæ*, ſacrifices in which the fire conſumed all, and left nothing for the prieſts; *hoſtiæ piaculares*, expiatory ſacrifices; *hoſtiæ ambegnæ* or *ambiegnæ*, ſacrifices of cows or ſheep that had brought forth twins; *hoſtiæ barugæ*, victims offered to predict future events from; *hoſtiæ mediales*, black victims offered at noon.

HOSTILITY, the action of an enemy, or a ſtate of warfare. The word is Latin, *hoſtilitas*, formed of the primitive *hoſtis*, which ſignifies "enemy;" and which anciently ſignified "ſtranger," *hoſpes*.

HOT-BEDS, in gardening, beds made with freſh horſe-dung, or tanner's bark, and covered with glaſſes to defend them from cold winds.

By the ſkilful management of hot-beds, we may imitate the temperature of warmer climates; by which means, the ſeeds of plants brought from any of the countries within the torrid zone may be made to flouriſh even under the poles.

The hot-beds commonly uſed in kitchen-gardens, are made with new horſe dung mixed with the litter of a ſtable, a few ſea-coal-aſhes, which laſt are of ſervice in continuing the heat of the dung. This ſhould remain ſix or ſeven days in a heap; and being then turned over, and the parts mixed well together, it ſhould be again caſt into a heap; where it may continue five or ſix days longer, by which time it will have acquired a due heat. Theſe hot-beds are made in the following manner: In ſome ſheltered part of the garden, dig out a trench of a length and width proportionable to the frames you intend it for: and if the ground be dry, about a foot or a foot and a half deep; but if it be wet, not above ſix inches: then wheel the dung into the opening, obſerving to ſtir every part of it with a fork, and to lay it exactly even and ſmooth on every part of the bed, laying the bottom part of the heap which is commonly free from litter upon the ſurface of the bed: and if it be deſigned for a bed to plant out cucumbers to remain for good, you muſt make a hole in the middle of the place deſigned for each light about ten inches over, and ſix deep, which ſhould be filled with good freſh earth, thruſting in a ſtick to ſhow the places where the holes are; then cover the bed all over with the earth that was taken out of the trench, about four inches thick, and put on the frame, letting it remain till the earth be warm, which commonly happens in three or four days after the bed is made, and then the plants may be placed in it. But if your hot-bed be deſigned for other plants, there need be no holes made in the dung; but after having ſmoothed the ſurface with a ſpade, you ſhould cover the dung about three or four inches thick with good earth, putting on the frames and glaſſes as before. In making theſe beds, care muſt be taken to ſettle the dung cloſe with a fork; and if it be pretty full of long litter, it ſhould be trod down equally on every part. During the firſt week or ten days after the bed is made, you ſhould cover the glaſſes but ſlightly in the night, and in the day-time carefully raiſe them to let out the ſteam: but as the heat abates, the covering ſhould be increaſed; and as the bed grows cold, new hot dung ſhould be added round the ſides of it.

The hot-bed made with tanner's bark is, however, much preferable to that deſcribed above, eſpecially for all tender exotic plants and fruits, which require an even degree of warmth to be continued for ſeveral months, which cannot be effected with horſe-dung. The manner of making them is as follows: Dig a trench about three feet deep, if the ground be dry; but if wet, it muſt not be above a foot deep at moſt, and muſt be raiſed two feet above the ground. The length muſt be proportioned to the frames intended to cover it; but it ſhould never be leſs than ten or twelve feet, and the width not leſs than ſix. The trench ſhould be bricked up round the ſides to the above-mentioned height of three feet, and filled in the ſpring with the freſh tanners bark that has been lately drawn out of their vats and has lain in a round heap, for the moiſture to drain out of it, only three or four days: as it is put in, gently beat it down equally with a dung-fork; but it muſt not be trodden, which would prevent its heating, by ſettling it too cloſe: then put on the frame, covering it with glaſſes; and in about ten days or a fortnight it will begin to heat; at which time plunge your pots of plants or ſeed into it, obſerving not to tread down the bark in doing it. Theſe beds will continue three or four months in a good temper of heat; and if you ſtir up the bark pretty deep, and mix a load or two of freſh bark with the old when you find the warmth decline, you will preſerve its heat two or three months longer. Many lay ſome hot horſe-dung in the bottom of the trench under the bark ; but this ought never to be practiſed unleſs the bed is wanted ſooner than the bark would heat of itſelf, and even then there ought only to be a ſmall quantity of dung at the bottom.

The frames which cover theſe beds, ſhould be proportioned to the ſeveral plants they are deſigned to contain. If they are to cover the ananas or pine-apple, the back part ſhould be three feet high, and the lower part 15 inches : if the bed be intended for taller plants, the frame muſt be made of a depth proportionable to them : but if it be for ſowing of ſeeds, the frame need not be above 14 inches high at the back, and 7 in the front ; by which means the heat will be much greater.

Hot-Houſe. See Stove and Hypocaustum.

HOTEL, a French term, anciently ſignifying a houſe or dwelling place.—It is now more commonly uſed for the palaces or houſes of the king, princes, and great lords. In this ſenſe they ſay, the *hotel de Conde*, *hotel de Conti*, *hotel du Louvre*, &c.

The grand *prevot de l'hotel*, is the firſt judge of the officers of the king's houſehold. His juriſdiction is much like that of lord ſteward of the houſehold of the king of England.

The *hotel de ville* is what we call a *town houſe* or *town-hall*.

HOTEL, is likewiſe uſed for a large inn, alſo for a large lodging-houſe ready furniſhed.

HOTMAN (Francis), one of the moſt learned civilians in the 16th century. He profeſſed law at Bourges : but, on account of religion, retired to Geneva, read lectures on civil law there, and publiſhed books with much ſtrength againſt the perſecutors, though great promiſes were made to engage him not to write any more in that manner ; but he did not regard their offers. He died at Baſil in 1590. His *Franco Gallia* is well known, having been done in Engliſh by lord Moleſworth. Some perſons think he was the author of *Vindiciæ contra Tyrannos*. All his works were printed at Geneva in 1590, in 3 vols folio.

HOTTENTOTS, a people in the ſouthern part of Africa, whoſe country ſurrounds the empire of Monomotapa, in form of a horſe-ſhoe, extending, according to Magin, from the Negroeſt of Cabo, as far as the Cape of Good Hope ; and from thence northward to the river Maguica, or Rio de St Siprita, including Mattatan a diſtinct kingdom. According to Sanutus, this coaſt, beginning at the Mountains of the Moon under the tropic of Capricorn in 23°½ S. Lat. extends north beyond the Cape to the coaſt of Zanguebar ; having the Indian ſea on the eaſt, the Ethiopic on the weſt, the ſouthern ocean on the ſouth ; and on the north the kingdoms of Mattatan, Monomotapa, and the coaſt of Zanguebar, or rather the Mountains of the moon, which divide it from the reſt of the continent.

The Europeans firſt became acquainted with this country in the year 1493, when Bartholomew Diaz, a Portugueſe admiral, diſcovered the moſt ſoutherly point of Africa now called the *Cape of Good Hope*, but by him *Cabo dos totos tormentos*, or Cape of all Plagues, on account of the ſtorms he met with in the neighbourhood ; but John, then king of Portugal, having from the account of Diaz concluded that a paſſage to the Eaſt Indies was now diſcovered, changed the name to that of the *Cape of Good Hope*, which it ſtill retains. In 1497, it was circumnavigated by Vaſco de Gama, who made a voyage to India that way ; however, it remained uſeleſs to Europeans till the year 1650, when Van Riebeck a Dutch ſurgeon firſt ſaw the advantages that would accrue to the Eaſt India company in Holland from a ſettlement at ſuch a convenient diſtance both from home and from India. The colony which he planted has ever ſince continued in the hands of the Dutch, has greatly increaſed in value, and is viſited by all the European ſhips trading to the Eaſt Indies. See *Good-Hope*.

The country now poſſeſſed by the Dutch is of pretty conſiderable extent, and comprehends that part of the African coaſt on the weſt called *Terra de Natal* It is naturally barren and mountainous ; but the induſtry of the Dutch hath overcome all natural difficulties, and it now produces not only a ſufficiency of all the neceſſaries of life for the inhabitants, but alſo for the refreſhment of all the Europeans who paſs and repaſs that way.

The coaſt abounds in capes, bays, and roads. Thirty leagues to the eaſt of the Cape of Good Hope, in S. Lat. 34. 21. is another Cape which runs out beyond 35°, called by the Portugueſe, who firſt doubled it, *Cabo dos Agulhas*, or the *Cape of Needles*, on account of ſome ſtrange variations in the magnetical needle obſerved as they came near it. Near this Cape is a flat ſhore, with plenty of fiſh : it begins in the weſt near a freſh-water river, and, extending 15 leagues in the main ſea, ends in the eaſt near *Fiſh-bay*. Cabo Falſo, ſo called by the Portugueſe, who returning from India miſtook it for the Cape of Good Hope, lies to the eaſtward between theſe two capes, abont eight or nine leagues beyond that of Good Hope. Along the coaſts, and on both ſides of the Cape of Good Hope, are many fine bays. Twenty-ſeven leagues to the north-weſt is Seldonha bay, ſo named from a Portugueſe captain ſhipwrecked on the coaſt. The largeſt and moſt commodious is *Table Bay*, on the ſouth, and near the mountain of that name, ſix leagues in circumference, with four fathom water cloſe to the beach. Oppoſite to this bay is *Robu Eilan*, or the iſland of Rabbits, in 34. 30. S. Lat. 67 leagues eaſt from the Cape of Good Hope. Peter Both, in 1661, diſcovered a bay, which he named *Uleeſt*, ſheltered only from north winds, in which is a ſmall iſland, and on the weſt a rivulet of freſh water extremely convenient for European mariners. Twenty-five or thirty leagues farther eaſt, Both diſcovered Marſhal Bay, afterwards named by the Portuguſe *Seno Formoſo*. Next to this is *Seno de Lago*, from its reſemblance to a lake. There are ſeveral roads in this bay, and an iſland called *Ilha dos Caos*. Cabo de S. Franciſco, and Cabo das Serras are marked upon charts between theſe two bays. Near the latter of theſe capes is Cabo de Arecito, and the iſland Contento ; and ſomething more north-eaſt is St Chriſtopher's river, called *San Chriſtovano* by the Portugueſe, and by the Hottentots *Nagod*. The country beyond this river was called by the Portugueſe, who diſcovered it on the day of our Lord's nativity, *Terra de Natal*. Between the Cape of Good Hope and Cabo das Agulhas are the Sweet, Salt, and Jagulina rivers, which run into the ſea, and Sweet-water river flows from the Table-mountain.

The moſt remarkable mountains in this country are, Table-mountain, Devil's Tower, Lion's Head, and the Tiger-hills. The three firſt lie near Table bay, and ſurround Table-valley, where the Cape town ſtands. (See the article *Good-Hope.*) Mr Forſter, in his voyage informs us, that "the extremity of Africa towards the ſouth is a maſs of high mountains, of which the outermoſt are craggy, black, and barren, conſiſting of a coarſe granite, which contains no heterogeneous parts, ſuch as petrefied ſhells, &c. nor any volcanic productions. The ground gradually riſes on all ſides towards the three mountains which lie round the bottom of the bay, keeping low and level only near the ſea-ſide, and growing ſomewhat marſhy in the Iſthmus between Falſe and Table Bays, where a ſalt rivulet falls into the latter. The marſhy part has ſome verdure, but intermixed with a great deal of ſand. The higher grounds, which, from the ſea ſide, have a parched and dreary appearance, are, however, covered with an immenſe variety of plants, among which are a prodigious number of ſhrubs, but ſcarce, one or two ſpecies that deſerve the name of *trees*. There are alſo a few ſmall plantations wherever a little run of water moiſtens the ground. The aſcent of Table-mount is very ſteep and difficult, on account of the number of looſe ſtones which roll away under the feet of the traveller. About the middle of the mountain is a bold, grand chaſm, whoſe walls are perpendicular, and often impending rocks piled up in ſtrata. Small rills of water ooze out of crevices, or fall from precipices in drops, giving life to hundreds of plants and low ſhrubs in the chaſm. The ſummit of the mountain is nearly level very barren, and bare of ſoil; ſeveral cavities, however, are filled with rain water, or contain a ſmall quantity of vegetable earth, from whence a few odoriferous plants draw their nouriſhment. Some antelopes, howling baboons, ſolitary vultures, and toads, are ſometimes to be met with on the mountain. The view from thence is very extenſive and pictureſque. The bay ſeems a ſmall pond or baſon, and the ſhips in it dwindled to little boats; the town under our feet, and the regular compartments of its gardens, look like the work of children."

Moſt accounts of this country that have been publiſhed mention a ſurpriſing phenomenon which is annually to be ſeen on the top of Table-hill from September to March; namely, a white cloud hovering on its top, and called by ſailors *the Devil's table-cloth*. (See the article *Good-Hope.*) This cloud is ſaid by ſome to appear at firſt no bigger than a barley-corn; then increaſes to the ſize of a walnut, and ſoon after covers the whole top of the mount. But, according to Mr Kolben, it is never leſs, even on its firſt appearance, than the ſize of a large ox, often bigger. It hangs in ſeveral fleeces over the Table-hill and the Wind or Devil's-hill; which fleeces, at laſt uniting, form a large cloud that covers the ſummits of theſe two hills. After this has reſted for ſome time without change or motion, the wind burſts out ſuddenly from it with the utmoſt fury. The ſkirts of the cloud are white, but ſeem much more compact than the matter of common clouds: the upper parts are of a leaden colour. No rain falls from it, but ſometimes it diſcovers a great deal of humidity; at which times it is of a darker colour, and the wind iſſuing from it is broken, raging by fits of ſhort continuance. In its uſual ſtate, the wind keeps up its firſt fury unabated for one, two, three, or eight days; and ſometimes for a whole month together. The cloud ſeems all the while undiminiſhed, though little fleeces are from time to time detached from it, and hurried down the ſides of the hills, vaniſhing when they reach the bottom, ſo that during the ſtorm the cloud ſeems to be ſupplied with new matter. When the cloud begins to brighten up, theſe ſupplies fail, and the wind proportionably abates. At length, the cloud growing tranſparent, the wind ceaſes. During the continuance of theſe ſouth-eaſt winds, the Table-valley is torn by furious whirlwinds. If they blow warm, they are generally of ſhort duration; and in this caſe the cloud ſoon diſappears. This wind rarely blows till after ſunſet, and never longer than till towards midnight, though the cloud remains; but then it is thin and clear: but when the wind blows cold, it is a ſure ſign that it will laſt for ſome time, an hour at noon and midnight excepted; when it ſeems to lie ſtill to recover itſelf, and then lets looſe its fury anew.

The Europeans at the Cape conſider the year as divided into two ſeaſons, which they term *monſoons*. The wet monſoon or winter, and the dry one or ſummer. The firſt begins with our ſpring in March; the latter with September, when our ſummer ends. In the ſummer monſoon reign the ſouth-eaſt winds already mentioned; which, though they clear and render the air more healthy, yet make it difficult for ſhips outward bound to enter Table-bay. In the bad ſeaſon, the Cape is much ſubject to fogs; and the north-weſt winds and rain make the inhabitants ſtay much at home. But there are frequent intermiſſions and many clear days till June and July; when it rains almoſt continually, and from thence till ſummer. The weather in winter is cold, raw, and unpleaſant; but never more rigorous than autumn in Germany. Water never freezes to above the thickneſs of half a crown; and as ſoon as the ſun appears, the ice is diſſolved. The Cape is rarely viſited by thunder and lightning, excepting a little near the turn of the ſeaſons, which never does any hurt. During the continuance of the ſouth-eaſt winds which rage in ſummer, the ſky is free of all clouds except that on the Table and Wind Hills already mentioned; but during the north-weſt winds, the air is thick, and loaded with heavy clouds big with rain. If the ſouth-eaſt winds would ceaſe for any length of time, the air becomes ſickly by reaſon of the ſea-weeds driving aſhore and rotting; hence the Europeans are at ſuch times affected with head achs and other diſorders: but, on the other hand, the violence of thoſe winds ſubjects them to inflammations of their eyes, &c.

The natives of this country are called *Hottentots*, in their own language; a word of which it is vain to inquire the meaning, ſince the language of this country can ſcarce be learned by any other nation. The Hottentot language is indeed ſaid to be a compoſition of the moſt ſtrange and diſagreeable ſounds, deemed by many the diſgrace of ſpeech, without human ſound or articulation, reſembling rather the noiſe of irritated turkies, the chattering of magpies, hooting of owls, and depending on extraordinary vibrations, inflexions and claſhings of the tongue againſt the palate.—If this account is true, however, it is obvious, that all the relations we have concerning the religion, &c. of the Hottentots derived from themſelves, muſt fall to the ground, as nobody can pretend to underſtand a language in itſelf unintelligible. The manners and cuſtoms of thoſe people, however, are eaſily obſervable, whether they themſelves give the relation or not; and if their language is conformable to them, it is no doubt of a nature ſufficiently wonderful.

Many accounts have been publiſhed concerning the extreme naſtineſs and filthy cuſtoms of the Hottentots; but from the obſervations of late travellers it appears, that theſe have either been exaggerated, or that the Hottentots (which is not improbable) have in ſome meaſure laid aſide their former manners. Dr Sparrman deſcribes them in much leſs diſguſtful terms, and M. Vaillant ſeems to have been charmed with their innocence and ſimplicity. According to the Doctor, theſe people are as tall as the generality of Europeans, tho' more ſlender in their perſons, which he attributes to their ſcanty ſupply of food, and not accuſtoming themſelves to hard labour. The characteriſtic of the nation, however, and which he thinks has not been obſerved by any one before, is, that they have ſmall hands and feet in proportion to the other parts of their body. The diſtance between the eyes appears greater than in Europeans, by reaſon of the root of the noſe being very low. The tip is pretty flat, and the iris of the eye has generally a dark-brown caſt, ſometimes approaching to black. Their ſkin is of a yellowiſh brown, ſomething like that of an European who has the jaundice in a high degree: though this colour does not in the leaſt appear in the whites of the eyes. Their lips are thinner than thoſe of their neighbours the *Negroes, Caffres*, or *Mozambiques*. "In fine (ſays our author) their mouths are of a middling ſize, and almoſt always furniſhed with a ſet of the fineſt teeth that can be ſeen; and, together with the reſt of their features, as well as their carriage, ſhape, and every motion, in ſhort their *tout enſemble* indicates health and delight, or at leaſt an air of *ſans ſouci*. This careleſs mien, however, diſcovers marks at the ſame time both of alacrity and reſolution; qualities which the Hottentots, in fact, can ſhow upon occaſion." The hair of the head is black and frizzled, though not very cloſe; and has ſo much the appearance of wool, that it would be taken for it, were it not for its harſhneſs. They have but ſeldom any appearance of a beard, or hair upon other parts of their bodies; and when any thing of this kind happens to be viſible, it is always very ſlight.

A general opinion has prevailed, that the Hottentot women have a kind of natural veil which covers the ſexual parts; but this is denied by our author. "The women (ſays he) have no parts uncommon to the reſt of their ſex: but the clitoris and nymphæ, particularly of thoſe who are paſt their youth, are pretty much elongated; a peculiarity which has undoubtedly got footing in this nation in conſequence of the relaxation neceſſarily produced by the method they have of beſmearing their bodies, their ſlothfulneſs, and the warmth of the climate."

The Hottentots beſmear all their bodies copiouſly with fat mixed up with a little ſoot. "This (ſays our author) is never wiped off; on the contrary, I never ſaw them uſe any thing to clean their ſkins, excepting that when in greaſing the wheels of their waggons, their hands were beſmeared with tar and pitch, they uſed to get it off very eaſily with cow-dung, at the ſame time rubbing their arms into the bargain up to the ſhoulders with this coſmetic; ſo that as the duſt and other filth, together with their ſooty ointment, and the ſweat of their bodies muſt neceſſarily, notwithſtanding it is continually wearing off, in ſome meaſure adhere to the ſkin, it contributes not a little to conceal the natural hue of the latter, and at the ſame time to change it from a bright umber-brown to a browniſh-yellow colour, obſcured with filth and naſtineſs."—The Doctor was enabled to diſcover the natural colour of the Hottentots by means of the nicety of ſome Dutch farmers wives, who had made their Hottentot girls waſh and ſcour their ſkins, that they might be leſs filthy in looking after the children, or doing any other work that required cleanlineſs. Many of the coloniſts, however, are of opinion, that this operation of waſhing is no improvement to the look of an Hottentot; but that their natural yellow is full as diſagreeable as the black or brown colour of the ointment; and that the waſhed ſkin of a native of this country ſeems to be deficient in dreſs, like ſhoes that want blacking. This the Doctor does not pretend to determine; though, whatever may be ſuppoſed deficient in look we ſhould think, muſt be made up in cleanlineſs.

The Hottentots perfume their bodies, bedaubing them all over with the powder of an herb, the ſmell of which is at once rank and aromatic, approaching to that of the poppy mixed with ſpices. For this purpoſe they uſe various ſpecies of the dioſma, called by them *buckhu*, and which they imagine to be very efficacious in the cure of diſorders. One ſpecies of this plant, growing about *Goud's-rivier* is ſaid to be ſo valuable, that no more than a thimble-full of its powder is given in exchange for a lamb.

By the ointment of ſoot and greaſe ſtuck full of the powder of *buckhu*, a paſte is formed which defends the bodies of the Hottentots in a great meaſure from the action of the air; ſo that they require very few clothes, and in fact go almoſt quite naked. The only covering of the men conſiſts of two leather ſtraps, which generally hang down the back from the chine to the thighs, each of them in the form of an iſoſceles triangle, their points uppermoſt, and faſtened to a belt which goes round their waſte, their baſes not being above three fingers broad; ſo that the covering they form is extremely trifling. Theſe ſtraps have very little dreſſing beſtowed upon them, ſo that they make a rattling noiſe as the Hottentot runs along: and our author ſuppoſes that they may produce an agreeable coolneſs by fanning him. Beſides this, the men have a bag or flap made of ſkin which hangs down before, and is faſtened to the belt already mentioned. The hollow part of this ſeems deſigned to receive that which with us modeſty requires to be concealed; but being only faſtened by a ſmall part of its upper end to a narrow belt, in other reſpects hanging quite looſe, it is but a very imperfect concealment; and when the wearer is walking, or otherwiſe in motion, it is none at all. They call this purſe the Dutch name of *jackall*, it being almoſt always prepared of the ſkin of that animal, with the hairy ſide turned outwards.

The women cover themſelves much more ſcrupulouſly than the men, having always two, and very often three coverings like aprons; though even theſe ſeem to be abundantly ſmall for what we would term decency in this country. The outermoſt of theſe, which is the largeſt, meaſures only from about ſix inches to a foot in breadth. All of them are made of a ſkin well prepared and greaſed, the outermoſt being adorned with glaſs beads ſtrung in different figures. The outermoſt reaches about half-way down the thighs, the middle about a third, or one half leſs, and the third ſcarcely exceeds the breadth of the hand. The firſt is ſaid to be deſigned for ornament, the ſecond as a defence for modeſty, and the third to be uſeful on certain occaſions, which, however, are much leſs troubleſome to the Hottentot than to the European females. Our author, with great probability ſuppoſes, that it was the ſight of this innermoſt apron which miſled the reverend Jeſuit Tackard, who, on his return to Europe, firſt propagated the ſtories concerning the natural vails or excreſcences of the Hottentots.—A ſtory was likewiſe commonly believed, that the men in general had but one teſticle, and that ſuch as were not naturally formed in this manner were artificially made ſo. But this our author likewiſe denies; and though he ſays that ſuch an operation might have been formerly performed upon the males, yet it is not ſo now.

The other garments worn by the Hottentots are formed of a ſheep's-ſkin with the woolly ſide turned inwards; this forming a kind of cloak, which is tied forwards over the breaſt: though ſometimes, inſtead of a ſheep's-ſkin, ſome ſmaller kind of fur is uſed as a material. In warm weather they let this cloak hang careleſsly over their ſhoulders, ſo that it reaches down to the calves of the legs, leaving the lower part of the breaſt, ſtomach, and fore-part of the legs and thighs bare; but in cold weather they wrap it round them; ſo that the fore-part of the body is likewiſe pretty well covered by it as far as the knees: But as one ſheep-ſkin is not ſufficient for this purpoſe, they ſew on a piece on the top at each ſide with a thong or catgut. In warm weather they ſometimes wear the woolly ſide outwards, but more frequently take off the cloak altogether, and carry it under their arm. This cloak or *kroſſe* ſerves them not only for clothes, but bedding alſo; and in this they lie on the bare ground, drawing up their bodies ſo cloſe, that the cloak is abundantly ſufficient to cover them.—The cloaks uſed by the women differ little from theſe already deſcribed, excepting only that they have a long peak on them, which they turn up; forming it with a little hood or pouch, with the hairy ſide inwards. In this they carry their little children, to which the mother's breaſts are now and then thrown over the ſhoulders; a cuſtom common among ſome other nations, where the breaſts of the females, by continual want of ſupport, grow to an enormous length. The men commonly wear no covering on their heads, though our author ſays he has ſeen one or two who wore a greaſy night-cap made of ſkin with the hair taken off. Thoſe who live neareſt the coloniſts have taken a liking to the European hats, and wear them ſlouched all round, or with only one ſide turned up. The women alſo frequently go bare-headed; though they ſometimes wear a cap made in the ſhape of a ſhort truncated cone. This appears to be the ſection of ſome animal's ſtomach, and is perfectly blacked by ſoot and fat mixed up together. Theſe caps are frequently prepared in ſuch a manner as to look ſhaggy; others have the appearance of velvet; and in our author's appearance are not inelegant. Over this they ſometimes wear an oval wreath or kind of crown made of a buffaloe's hide, with the hair outermoſt. It is about four fingers breadth in height, and ſurrounds the head ſo as to go a little way down upon the forehead, and the ſame depth on the neck behind, without covering the upper part of the cap above deſcribed. The edges of this wreath, both upper and under are always ſmooth and even; each of them ſet with a row of ſmall ſhells of the *cyprea* kind, to the number of more than 30, in ſuch a mannner, that being placed quite cloſe to one another, their beautiful white enamel, together with their mouths, are turned outwards. Between two rows of theſe ſhells run two others parallel, or elſe waved and indented in various ways. The Hottentots never adorn their ears or noſes as other ſavages do: though the latter are ſometimes marked with a black ſtreak of ſoot; at others, though more rarely, with a large ſpot of red lead; of which laſt, on feſtivals and holidays, they likewiſe put a little on their cheeks. The necks of the men are bare, but thoſe of the women are ornamented with a thong of undreſſed leather, upon which are ſtrung eight or ten ſhells. Theſe, which are about the ſize of beans, have a white ground, with large black ſpots of different ſizes: but as they are always made uſe of in a burniſhed ſtate, the Doctor is uncertain whether they be of that kind which is received in the Syſtema Naturæ under the name of *nerita albicilla*, or *exuvia*. Theſe ſhells are ſold at an enormous price, no leſs than a ſheep for each; and it is ſaid that they come from the moſt diſtant coaſt of Caffraria. Both men and women are very fond of European beads, particularly the blue and white ones of the ſize of a pea; of which they tie ſeveral rows round the middle, and next to the girdles which hold the coverings abovementioned. Beſides theſe ornaments, they uſe rings on their arms and legs; moſt of them made of thick leather ſtraps generally cut in a circular ſhape; which, by being beat and held over the fire, are rendered tough enough to retain the curvature that is given them. From theſe rings it has been almoſt univerſally believed, that the Hottentots wrap guts about their legs in order to eat them occaſionally. The men wear from one to five or ſix of theſe rings on the arms juſt above the wriſt, but ſeldom on their legs. The matrons of a higher rank have frequently a conſiderable number of them both on their arms and legs, eſpecially on the latter; ſo that they are covered with them from the feet up to the knees. Theſe rings are of various thickneſſes, from that of a gooſe-quill to two or three times that ſize. Sometimes they are made of pieces of leather forming one entire ring; ſo that the arms and feet muſt be put through them when the wearer wiſhes to put them on. They are ſtrung upon the legs, ſmall and great, without any nicety; but are ſo large, that they ſhake and get twiſted when the perſon walks. Rings of iron or copper, but eſpecially of braſs, of the ſize of a gooſe-quill, are conſidered as more genteel than thoſe of leather. However, they are ſometimes worn along with the latter, to the number of ſix or eight at a time, particularly on the arms. The girls are not allowed to uſe any rings till they are marriageable. The Hottentots ſeldom wear any ſhoes; but ſuch as they do make uſe of are of the ſame form with thoſe worn by the African peaſants, by the Eaſthonians, and Livonians, as well as by ſome Finlanders; ſo that it is impoſſible to ſay whether they are the invention of the Dutch or the Hottentots themſelves. They are made of undreſſed leather, with the hairy ſide outward without any other preparation than that of being beat and moiſtened. If it be a thick and ſtout hide, as that of a buffaloe, it is kept for ſome hours in cow-dung, which renders it beſides very ſoft and pliable. Some kind of greaſe is afterwards uſed for the ſame purpoſe. The ſhoes are then made in the following manner. They take a piece of leather, of a rectangular form, ſomething longer and broader than the foot of the perſon for whom the ſhoes are intended; the two foremoſt corners are doubled up together, and ſewed down, ſo as to cover the fore-part of the foot; but this ſeam may be avoided, and the ſhoes made much neater at the toes, by fitting immediately over them a cap taken from the membrane in the knee-joint of the hind-leg of ſome animal. In order to make this piece of ſkin or leather riſe up to the height of an inch on both ſides of the foot, and cloſe it in neatly, it is pierced with holes at ſmall diſtances all round the edge, as far as the hind quarters; and through theſe holes is paſſed a thong, by which the rim is drawn up into gathers. In order to make ſtrong hind quarters, the back part of the piece of leather is doubled inward, and then raiſed up and preſſed along the heel. The ends of the thong or gathering ſtring are then threaded on both ſides through the upper edge of the hind-quarters to the height of about two inches; they are then carried forwards, in order to be drawn through two of the abovementioned holes on the inſide of each rim. Laſtly, they are tied over the inſtep, or if it be thought neceſſary to tie the ſhoe ſtill faſter, they are carried croſs-ways over the inſtep, and ſo downwards under the thong, which comes out from the hind-quarters; then upwards again over the ancle, and even round the leg itſelf if the wearer chooſes. Shoes of this kind are not without their advantages: they fit as neat upon the foot as a ſtocking, and at the ſame time preſerve their form. They are eaſily kept ſoft and pliable by conſtantly warming them; or if at any time they ſhould become ſomewhat hard, this is eaſily remedied by beating and greaſing them. They are extremely light and cool, by reaſon that they do not cover ſo much of the foot as a common ſhoe. They wear very well, as they are without any ſeam, and the ſoles of the ſhoes are both tough and yielding. Theſe field ſhoes, as they are called, being made of almoſt raw leather, are much more durable than thoſe of tanned leather which are burnt up by the African ſands, and ſlip and roll about in them; being alſo very ready to be torn in a rocky ſoil which is not the caſe with the others. The Doctor is of opinion, that theſe ſhoes would be particularly uſeful to ſailors.

The huts of the Hottentots are built exactly alike; and we may readily give credit to our author when he tells us, that they are done in a ſtyle of architecture which does not a little contribute to keep envy from inſinuating itſelf under their roofs. Some of theſe huts are circular, and others of an oblong ſhape, reſembling a round bee-hive or vault; the ground-plot being from 18 to 24 feet in diameter. The higheſt are ſo low, that it is ſcarce ever poſſible for a middle-ſized man to ſtand upright even in the centre of the arch; "but (ſays our author) neither the lowneſs thereof nor that of the door, which is but juſt three feet high, can perhaps be conſidered as any inconvenience to a Hottentot, who finds no difficulty in ſtooping and crawling upon all fours, and is at any time more inclined to lie down than to ſtand. The fire-place is in the middle of each hut, by which means the walls are not ſo much expoſed to danger from fire. From this ſituation of the fire-place alſo the Hottentots derive this additional advantage, that they can all ſit or lie in a circle round it, enjoying equally the warmth of the fire. The door, low as it is, alone lets in day-light or lets out the ſmoke; and ſo much are theſe people accuſtomed to live in ſuch ſmoky manſions, that their eyes are never affected by it in the leaſt, nor even by the mephitic vapour of the fuel, which to Europeans would be certain death.

The frame of the arched roof is compoſed of ſlender rods or ſprays of trees. Theſe being previouſly bent into a proper form, are laid, either whole or pieced, ſome parallel to one another, others croſswiſe; after which they are ſtrengthened by binding others round them in a circular form with withies. All theſe are taken principally from the *cliffortia conoides*, which grows plentifully in this country near the rivers. Large mats are then placed very neatly over this lattice work, ſo as perfectly to cover the whole. The aperture which is left for the door is cloſed occaſionally by a ſkin or piece of matting. Theſe mats are made of a kind of kane or reed in the following manner. The reeds being laid parallel to one another, are faſtened together with ſinews or catgut, or ſome kind of catgut which they have had an opportunity of getting from the Europeans; ſo that they have it in their power to make them as long as they pleaſe, and as broad as the length of the reeds, which is from ſix to ten feet. The coloniſts make uſe of the ſame kind of matting, next to the tilts of their waggons, to prevent the ſail-cloth from being rubbed and worn, and likewiſe to help to keep out the rain.

In a *craal*, or Hottentot village, the huts are moſt commonly diſpoſed in a circle, with the doors inwards: by which means a kind of court-yard is formed, where the cattle are kept at nights. The milk, as ſoon as taken from the cow, is put to other milk which is curdled, and kept in a leather ſack with the hairy ſide inwards as being the more cleanly; ſo that thus the milk is never drunk ſweet. In ſome northern diſtricts, where the land is dry and parched, both Hottentots and coloniſts are ſhepherds. When an Hottentot has a mind to ſhift his dwelling, he lays all the mats, ſkins, and rods, of which it is compoſed, on the backs of his cattle, which, to a ſtranger, makes a monſtrous, unwieldy, and even ridiculous appearance.

There is a ſpecies of Hottentots named *Boſhieſmen* who dwell in the woody and mountainous parts, and ſubſiſt entirely by plunder. They uſe poiſoned arrows which they ſhoot from bows about a yard long and an inch in thickneſs in the middle, very much pointed at both ends. Dr Sparrman does not know the wood of which they are made, but thinks that it is not very elaſtic. The ſtrings were made, ſome of ſinews, and others of a kind of hemp, or the inner bark of ſome vegetable: but moſt of them in a very ſlovenly manner. The arrows are about a foot and an half long; headed with bone, and a triangular bit of iron; having alſo a piece of quill bound on very ſtrongly with ſinews, about an inch and an half from the top, in order to prevent it from, being eaſily drawn out of the fleſh. The whole is laſtly covered over with a very deadly poiſon of the conſiſtence of an extract. Their quivers are two feet long and four inches in diameter; and are ſuppoſed by our author to be made of the branch of a tree hollowed out, or more probably of the bark of one of the branches taken off whole, the bottom and cover being made of leather. It is daubed on the outſide with an unctuous ſubſtance which grows hard when dry, and is lined about the aperture with the ſkin of the yellow ſerpent, ſuppoſed to be the moſt deadly in all that part of the world. The poiſon they make uſe of is taken from the moſt venomous ſerpents; and, ignorant as the Hottentots are, they all know that the poiſon of ſerpents may be ſwallowed with ſafety. See the article BOSHIESMEN.

In the year 1779, Lieutenant William Paterſon, who took a long and dangerous excurſion, from the Cape along the eaſtern ſide of the continent, diſcovered a new tribe of Hottentots, whoſe living, he ſays is in the higheſt degree wretched, and who are apparently the dirtieſt of all the Hottentot tribes. Their dreſs is compoſed of the ſkins of ſeals and jackals the fleſh of which animals they feed upon. If a grampus happen to be caſt aſhore, they remove their huts to the place, and feed upon the carcaſe as long as it laſts, though perhaps it may be half rotten by the heat of the weather. They beſmear their ſkins with the oil; by which means they ſmell ſo exceedingly rank that their approach may be thus perceived before they come in ſight. Their huts, however, are much ſuperior to thoſe of the ſouthern Hottentots already deſcribed; being higher, thatched with graſs, and furniſhed with ſtools made of the back-bones of the grampus. They dry their fiſh in the ſun; as the lieutenant found ſeveral kinds of fiſh near their huts ſuſpended from poles, probably for this purpoſe. He found alſo ſeveral aromatic plants which they had been drying.

With reſpect to the religion of the Hottentots, it does not appear that they have any. On being queſtioned on the ſubject of a Creator and Governor of the univerſe, they anſwer that they know nothing of the matter; nor do they ſeem willing to receive any inſtruction. All of them, however, have the moſt firm belief in the powers of magic; from whence it might be inferred that they believe in an evil being analogous to what we call *the devil*; but they pay no religious worſhip to him, though from this ſource they derive all the evil that happens, and among theſe evils they reckon cold, rain, and thunder. So monſtrouſly ignorant are they, that many of the coloniſts aſſured Dr Sparrman, that their Boſhieſmen would abuſe the thunder with many opprobrious epithets and threaten to aſſault the flaſhes of lightning with old ſhoes, or any thing that comes firſt to hand. Even the moſt intelligent among them could not be convinced by all the arguments our author could uſe, that rain was not always an evil, and that it would be an unhappy circumſtance if it were never to rain. "A maxim (ſays he), from a race of men in other reſpects really endowed with ſome ſenſe, and frequently with no ſmall degree of penetration and cunning, ought, methinks, to be conſidered as an indelible religious or ſuperſtitious notion entertained by them from their infancy, rather than as an idea taken up on due deliberaion and conſequent conviction."

As the Hottentots have ſo ſtrong a belief in the powers of magic, it is no wonder that they have abundance of witches and conjurers among them. Theſe will readily undertake any thing, even to put a ſtop to thunder and rain, provided they be well paid for their pains; and if it happen to thunder or rain longer than the time they promiſed, they have always for an excuſe, that a more powerful conjurer has put a ſtop to their incantations. Many of the Hottentots believe that all diſorders incident to the human body are cured by magic. The wizards are fond of encouraging this idea; but at the ſame time take care to employ both external and internal remedies. Among the former may be reckoned a cure performed upon Captain Cook in ſome of the South Sea, iſlands, viz. that of pinching, cuffing, and kneading the whole body of the patient. To this, however, the Hottentot phyſicians add that of pretending to ſuck out a bone from ſome part of the patient's body. After this it ſometimes happens that the ſick perſon is relieved, and ſometimes not. In the latter caſe the operation is repeated; and if he dies, his friends lament that he was bewitched beyond the power of any one to aſſiſt him. Theſe conjurors appear to be poſſeſſed of conſiderable ſlight of hand. Our author was informed by a coloniſt, that when he was a child, and playing with a bone of an ox which he drew as a cart, it appeared to his great aſtoniſhment to be ſucked out of a ſick perſon's back by a wizard; and as far as he could remember, the patient recovered ſoon after. Theſe pretenſions of the wizards ſometimes render them liable to perſecutions; and there is an inſtance of a chief named *Paloo*, who ordered a general maſſacre among them, in hopes of cutting off the perſon who he believed had bewitched himſelf, and afflicted him with ſore eyes.

The ſuperſtition of the Hottentots never operates in the way of making them afraid in the dark. They ſeem, however, to have ſome ideas of a future ſtate, as they reproach their friends, when dead with leaving them ſo ſoon; at the ſame time admoniſhing them from henceforth to demean themſelves properly: by which they mean, that their deceaſed friends ſhould not come back again and haunt them, nor allow themſelves to be made uſe of by wizards to bring any miſchief on thoſe who ſurvive them.

There is a genus of inſects (the *mantis*) which, it has been generally thought, the Hottentots worſhip; but our author is ſo far from being of this opinion that he tells us they have more than once catched ſeveral of them for him, aſſiſted him in ſticking pins through them as he did through other inſects. "There is (ſays he), however, a diminutive ſpecies of this inſect, which ſome think it would be a crime, as well as very dangerous, to do any harm to: but this we have no more reaſon to look upon as any kind of religious worſhip, than we have to conſider in the ſame light a certain ſuperſtitious notion prevalent among many of the more ſimple people in our own country (Sweden), who imagine that their ſins will be forgiven them, if they ſet a cock-chafer on its feet that has happened to fall on its back. The moon, according to Kolbe, receives a kind of adoration from the Hottentots; but the fact is, that they merely take the opportunity of her beams, and at the ſame time of the coolneſs of the night, to amuſe themſelves with dancing; and conſequently have no more thoughts of worſhipping her than the Chriſtian coloniſts who are ſeen at that time ſtrolling in great numbers about the ſtreets. and parading on the ſtone ſteps with which their houſes are uſually encircled." The conjurors themſelves, according to our author, are generally freethinkers, who have neither religion nor ſuperſtition of any kind.

Lieutenant Paterſon has given the following account of the Caffres, a nation whom no European but himſelf has ever ſeen, and who inhabit the country to the northeaſt of the Cape as far down as 31° South Latitude.

The men are from five feet ten inches to ſix feet high, and well proportioned; and in general manifeſt great courage in attacking lions or other wild beaſts. The nation, at the time he viſited them, was divided into two parties, one to the northward, commanded by a chief named *Chatha Bea*, or *Tambuſhie*, which latter appellation he had obtained from his mother, a woman of an Hottentot tribe named *Tambukies*. This man was the ſon of a chief named *Pharoa*, who died about three years before, and left two ſons *Cha Cha Bea*, and another named *Dſirika*, who claimed the ſupreme authority on account of his mother being of the Caffre nation. This occaſioned a conteſt between the two brothers, in the courſe of which *Cha Cha Bea* was driven out of his territories with a great number of his party: after which he took up his reſidence at a place named *Khouta*, where he had an opportunity of entering into an alliance with the Boſhies-men.—The Caffres are of a jet black colour, their eyes large, and their teeth as white as ivory. The clothing of both ſexes is nearly the ſame; conſiſting entirely of the hides of oxen, which are made as pliant as cloth. The men wear tails of different animals tied round their thighs, pieces of braſs in their hair, and large rings of ivory on their arms: they are likewiſe adorned with the hair of lions, feathers faſtened on their heads, &c. They uſe the ceremony of circumciſion, which is uſually performed upon them when they are nine years of age. They are very fond of dogs, which they exchange for cattle, and will even give two bullocks in exchange for one dog which pleaſes them. They are expert in throwing lances, and in time of war uſe ſhields made of the hides of oxen. Throughout the day the men occupy themſelves in hunting, fighting, or dancing; the women being employed in the cultivation of their gardens and corn. They ſeem not to be deſtitute of the knowledge of agriculture, as they cultivate ſeveral vegetables which do not naturally grow in their own country, viz. tobacco, water-melons, a ſmall kind of kidney-beans, and hemp. The women alſo make their baſkets and the mats on which they lie. The men are very fond of their cattle, and cut their horns in ſuch a manner as to be able to turn them into any ſhape they pleaſe and teach them to anſwer to a whiſtle. Mr Paterſon is of opinion that the country they inhabit is greatly ſuperior to any part of Africa.

Of the Dutch ſettlements and policy at the Cape, Mr Forſter gives the following account.

"The income of the governor here is very conſiderable; for, beſides a fixed appointment and the uſe of houſes, gardens, proper furniture, and every thing that belongs to his table, he receives about 10 dollars for every leagre of wine which the company buy of the farmer in order to be exported to Batavia. The company allows the ſum of 40 dollars for each leagre, of which the farmer receives but 24; what remains is ſhared between the governor and ſecond or deputy; the former taking two thirds, which ſometimes are ſaid to amount to 4600 dollars per annum. The deputy governor has the direction of the company's whole commerce here, and ſigns all orders to the different departments under him, as well as the governor to others. He and the fiſcal have the rank of *upper koopman*. The fiſcal is at the head of the police, and ſees the penal laws put in execution: his income conſiſts of fines, and of the duties laid on certain articles of commerce: but if he be ſtrict in exacting them, he is univerſally deteſted. The ſound policy of the Dutch has likewiſe found it neceſſary to place the fiſcal as a check, to overawe the other officers of the company, that they may not counteract the intereſts of their maſters or infringe the laws of the mother-country. He is, to that end, commonly well verſed in juridical affairs, and depends ſolely upon the mother-country. The major (at preſent Mr Von Perhn, who received us with great politeneſs) has the rank of *koopman*, or merchant; this circumſtance ſurpriſes a ſtranger, who, in all other European ſtates, is uſed to ſee military honours confer diſtinction and precedence; and appears ſtill more ſingular to one who knows the contraſt in this particular between Holland and Ruſſia, where the idea of military rank is annexed to every place, even that of a profeſſor at the univerſity. The number of regular ſoldiers at this colony amounts to about 700: of which 400 form the garriſon of the fort, near the Cape town. The inhabitants capable of bearing arms form a militia of 4000 men; of whom a conſiderable part may be aſſembled in a few hours, by means of ſignals made from alarm-places in different parts of the country. We may from hence make ſome eſtimate of the number of white people in this colony, which is at preſent ſo extenſive that the diſtant ſettlements are above a month's journey from the Cape; but thoſe remote parts lie ſometimes more than a day's journey from each other, are ſurrounded by various nations of Hottentots, and too frequently feel the want of protection from their own government at that diſtance. The ſlaves in this colony are at leaſt in the proportion of five or more to one white perſon. The principal inhabitants at the Cape have ſometimes from 20 to 30 ſlaves; which are in general treated with great lenity, and ſometimes become great favourites with their maſters, who give them very good clothing, but oblige them to wear neither ſhoes nor ſtockings, reſerving theſe articles to themſelves. The ſlaves are chiefly brought from Madagaſcar, and a little veſſel annually goes from the Cape thither on that trade; there are, however, beſides them, a number of Malays and Bengaleſe, and ſome negroes. The coloniſts themſelves are for the greateſt part Germans, with ſome families of Dutch, and ſome of French Proteſtants. The character of the inhabitants of the town is mixed. They are induſtrious, but fond of good living, hoſpitable, and ſocial; though accuſtomed to hire their appartments to ſtrangers for the time they touch at this ſettlement, and uſed to be complimented with rich preſents of ſtuffs, &c. by the officers of merchant ſhips. They have no great opportunities of acquiring knowledge, there being no public ſchools of note at the Cape; their young men are therefore commonly ſent to Holland for improvement, and their female education is too much neglected. A kind of diſlike to reading, and the want of public amuſements, make their converſation unintereſting, and too frequently turn it upon ſcandal, which is commonly carried to a degree of inveteracy peculiar to little towns. The French, Engliſh, Portugueſe, and Malay languages, are very commonly ſpoken, and many of the ladies have acquired them. This circumſtance, together with the accompliſhments of ſinging, dancing, and plying a tune on the lute, frequently united in an agreeable perſon, make amends for the want of refined manners and delicacy of ſentiment. There are, however, among the principal inhabitants perſons of both ſexes, whoſe whole deportment, extenſive reading, and well-cultivated underſtanding, would be admired and diſtinguiſhed even in Europe. Their circumſtances are in general eaſy, and very often affluent, on account of the cheap rate at which the neceſſaries of life are to be procured; but they ſeldom amaſs ſuch prodigious riches here as at Batavia; and I was told the greateſt private fortune at the Cape did not exceed 100,000 dollars, or about 22,500 l. ſterling.

"The farmers in the country are very plain hoſpitable people; but thoſe who dwell in the remoteſt ſettlements ſeldom come to town, and are ſaid to be very ignorant: This may be eaſily conceived, becauſe, they have no better company than Hottentots, their dwellings being often ſeveral days journey aſunder, which muſt in a great meaſure preclude all intercourſe. The vine is cultivated in plantations within the compaſs of a few days journey from the town; which were eſtabliſhed by the firſt coloniſts, and of which the ground was given in perpetual property to them and their heirs. The company at preſent never part with the property of the ground, but let the ſurface to the farmer for an annual rent, which, though extremely moderate, being only 25 dollars for 60 acres, yet does not give ſufficient encouragement to plant vineyards. The diſtant ſettlements, therefore chiefly raiſe corn and rear cattle; nay, many of the ſettlers entirely follow the latter branch of ruſtic employment, and ſome have very numerous flocks. We were told there were two farmers who had each 15000 ſheep, and oxen in proportion; and ſeveral who poſſeſſed 6000 or 8000 ſheep, of which they drive great droves to town every year: but lions and buffaloes, and the fatigue of the journey, deſtroy numbers of their cattle before they can bring them ſo far. They commonly take their families with them in large waggons covered with linen or leather, ſpread over hoops, and drawn by 8, 10, and ſometimes 12 pair of oxen. They bring butter, mutton-tallow, the fleſh and ſkins of ſea-cows (hippopotamus), together with lion and rhinoceros' ſkins to ſell. They have ſeveral ſlaves, and commonly engage in their ſervice ſeveral Hottentots of the poorer ſort, and (as we were told) of the tribe called BOSHIESMEN, *Boſchemans*, or *Buſhmen*, who have no cattle of their own, but commonly ſubſiſt by hunting, or by committing depredations on their neighbours. The opulent farmers ſet up a young beginner by intruſting to his care a flock of 400 or 500 ſheep, which he leads to a diſtant ſpot, where he finds plenty of good graſs and water; the one-half of all the lambs which are yeaned fall to his ſhare, by which means he ſoon becomes as rich as his benefactor.

"Though the Dutch company ſeem evidently to diſcourage all new ſettlers, by granting no lands in private property; yet the products of the country have of late years ſufficed not only to ſupply the iſles of France and Bourbon with corn, but likewiſe to furniſh the mother-country with ſeveral ſhip-loads. Theſe exports would certainly be made at an eaſier rate than at preſent, if the ſettlements did not extend ſo far into the country, from whence the products muſt be brought to the Table-bay by land-carriage, on roads which are almoſt impaſſable. The intermediate ſpaces of uncultivated land between the different ſettlements are very extenſive, and contain many ſpots fit for agriculture; but one of the chief reaſons why the coloniſts are ſo much divided and ſcattered throughout the country, is to be met with in another regulation of the company, which forbids every new ſettler to eſtabliſh himſelf within a mile of another. It is evident, that if this ſettlement were in the hands of the commonwealth, it would have attained to a great population, and a degree of opulence and ſplendor of which it has not the leaſt hopes at preſent: but a private company of Eaſt-India merchants find their account much better in keeping all the landed property to themſelves, and tying down the coloniſt, leſt he ſhould become too great and powerful.

"The wines made at the Cape are of the greateſt variety poſſible. The beſt, which is made at M. Vander Spy's plantation of Conſtantia, is ſpoken of in Europe more by report than from real knowledge; 30 leagres (or pipes) at the utmoſt are annually raiſed of this kind, and each leagre ſells for about 50 l. on the ſpot. The vines from which it is made were originally brought from Shiraz in Perſia. Several other ſorts grow in the neighbourhood of that plantation, which produce a ſweet rich wine, that generally paſſes for genuine Conſtantia in Europe. French plants of burgundy, muſcade, and frontignac, have likewiſe been tried, and have ſucceeded extremely well, ſometimes producing wines ſuperior to thoſe of the original ſoil. An excellent dry wine, which has a ſlight agreeable tartneſs, is commonly drank in the principal families, and is made of Madeira vines tranſplanted to the Cape. Several low ſorts, not entirely diſagreeable, are raiſed in great plenty, and ſold at a very cheap rate; ſo that the ſailors of the Eaſt-India ſhips commonly indulge themſelves very plentifully in them whenever they come aſhore.

"The products of the country ſupply with proviſions the ſhips of all nations which touch at the Cape. Corn, flour, biſcuit, ſalted beef, brandy and wine, are to be had in abundance, and at moderate prices; and their freſh greens, fine fruits, good mutton and beef, are excellent reſtoratives to ſeamen who have made a long voyage."

HOTTINGER (John Henry), born at Zurich in Switzerland in 1620, profeſſed the Oriental languages at Leyden, and was eſteemed by all his learned colleagues. He was drowned, with part of his family, in the river Lemit, in the year 1667. He wrote a prodigious number of works; the principal of which are, 1. *Exercitationes Anti-Morinianæ de Pentateucho, Samaritano*, 4to; in which he defends the Hebrew text againſt father Morin. 2. *Hiſtoria Orientalis*, 4to. 3. *Bibliothecarius quadripartitus*. 4. *Theſaurus Philologicus Sacræ Scripturæ*, 4to. 5. *Hiſtoria Eccleſiaſtica*. 6. *Promptuarium, ſive Bibliotheca Orientalis*, 4to. 7. *Diſſertationes miſcellanæ*, &c.

HOTTONIA, WATER-VIOLET: A genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 21ſt order, *Preciæ*. The corolla is ſalver-ſhaped; the ſtamina are placed in the tube of the corolla; and the capſule is unilocular. There is but one ſpecies, viz. the paluſtris, with a naked ſtalk. It grows naturally in the ſtanding waters in many parts of England. The leaves, which are for the moſt part immerſed in water, are finely winged and flat like moſt of the ſea-plants; and at the bottom have long fibrous roots, which ſtrike into the mud: the flower-ſtalks riſe five or ſix inches above the water, and toward the top have two or three whorls of purple flowers terminated by a ſmall cluſter of the ſame. Theſe flowers have the appearance of thoſe of the ſtock-gilliflower, ſo make a pretty appearance on the ſurface of the water. It may be propagated in deep ſtanding waters, by procuring the ſeeds when they are ripe, from the places of their natural growth; which ſhould be immediately dropped into the water in thoſe places where they are deſigned to grow, and the ſpring following they will appear; and if they are not diſturbed, they will ſoon propagate themſelves in great plenty.—Cows eat this plant; ſwine refuſe it.

HOUBRAKEN (Jacob), a celebrated engraver, whoſe great excellence conſiſted in the portrait line. His works are diſtinguiſhed by an admirable ſoftneſs and delicacy of execution, joined with good drawing, and a fine taſte. If his beſt performances have ever been ſurpaſſed, it is in the maſterly determination of the features, which we find in the works of Nanteuil, Edelink, and Drevet: this gives an animation to the countenance, more eaſily to be felt than deſcribed. His works are pretty numerous; and moſt of them being for Engliſh publications, they are ſufficiently known in that country. In particular the greateſt and beſt part of the collection of portraits of Illuſtrious men, publiſhed in London by I. and P. Knapton, were by his hand.

HOVEDON (Roger de), born of an illuſtrious family in Yorkſhire, moſt probably at the town of that name now called *Howden*, ſome time in the reign of Henry I. After he had received the firſt parts of education in his native country, he ſtudied the civil and canon law, which were then become moſt faſhionable and lucrative branches of learning. He became domeſtic chaplain to Henry II. who employed him to tranſact ſeveral eccleſiaſtical affairs: in which he acquitted himſelf with honour. But his moſt meritorious work was his annals of England, from A. D. 731, when Bede's eccleſiaſtical hiſtory ends, to A. D. 1202. This work, which is one of the moſt voluminous of ancient hiſtories, is more valuable for the ſincerity with which it is written, and the great variety of facts which it contains, than for the beauty of its ſtyle, or the regularity of its arrangement.

HOUGH, HAM, in the manege, the joint of the hind-leg of a beaſt, which connects the thigh to the leg. See HAM.

To Hough, or *cut the Houghs*, is to ham-ſtring, or to diſable by cutting the ſinews of the ham.

HOULIERES (Antoniette de), a French lady, whoſe poetry is highly eſteemed in France. Her works and thoſe of her daughter have been collected and printed together in two volumes. Moſt of the Idyls, particularly thoſe on ſheep and birds, ſurpaſs every thing of the kind in the French language: the thoughts and expreſſions are noble, and the ſtyle pure, flowing, and chaſte. Mademoiſelle des Houlieres carried the poetic prize in the French academy againſt Fontenelle. Both of theſe ladies were members of the academy of Ricovatri; the mother was alſo a member of the academy of Arles. Thoſe who deſire to be more particularly acquainted with the hiſtory of Madam des Houlieres, may conſult her life prefixed to her works in the Paris edition of 1747, 2 vols 12mo.

HOUSLWORTHY, a large town of Devonſhire, ſeated between two branches of the river Tamer, having a good market town for corn and proviſions. W. Long. 4. 42. N. Lat. 50. 50.

HOUND. See *Canis*, *Blood-Hound*, or *Gre-Hound*.

Training of Hounds. Before we ſpeak of the methods proper to be uſed for this purpoſe, it will be neceſſary to point out the qualities which ſportſmen deſire to meet with in theſe animals. It is generally underſtood, that hounds of the middle ſize are the moſt proper, it being remarked, that all animals of that deſcription are ſtronger than either ſuch as are very ſmall or very large. The ſhape of the hound ought to be particularly attended to; for if he be not well proportioned, he can neither run faſt nor do much work. His legs ought to be ſtraight, his feet round, and not very large; his ſhoulders back; his breaſt rather wide than narrow; his cheſt deep, his back broad, his head ſmall, his neck thin; his tail thick and buſhy, and if he carry it well ſo much the better. None of thoſe young hounds which are *out at the elbows*, or ſuch as are weak from the knee to the foot, ſhould ever be taken into the pack. That the pack may look well, it is proper that the hounds ſhould be as much as poſſible of a ſize: and if the animals be handſome at the ſame time, the pack will then be perfect. It muſt not, however, be thought, that this contributes any thing to the *goodneſs* of a pack; for very unhandſome packs, conſiſting of hounds entirely different in ſize and colour, have been known to afford very good ſport. It is only neceſſary that they ſhould run well together; to which indeed an uniformity in ſize and ſhape would ſeem to contribute in ſome degree. The pack that can run ten miles, or any other conſiderable ſpace, in the ſhorteſt time, may be ſaid to go faſteſt, though the hounds taken ſeparately might be conſiderably inferior to others in ſwiftneſs. A pack of hounds, conſidered in a collective body, go faſt in proportion to the excellence of their noſes and the head they carry. Packs which are compoſed of hounds of various kinds ſeldom run well. When the packs are very large, the hounds are ſeldom ſufficiently hunted to be good; twenty or thirty couple therefore, or at moſt forty, will be abundantly ſufficient for the keeneſt ſportſman in the country, as thus he may be enabled to hunt three or even four times a week. The number of hounds to be kept, muſt, however, in a conſiderable degree, depend on the ſtrength of the pack and the country in which you hunt. They ſhould be left at home as ſeldom as poſſible; and too many old hounds ſhould not be kept. None ought to be kept above five or ſix ſeaſons, though this alſo is ſomewhat uncertain, as we have no rule for judging how long a hound will laſt.

In breeding of hounds, conſiderable attention ought to be paid to the dog from whom you breed. All ſuch are to be rejected as have a tender noſe, as are *babblers* or *ſkirters*. An old dog ſhould never be put to an old bitch; nor ſhould any attempts be made to croſs the breed unleſs in a proper and judicious manner. Mr Beckford † informs us that he has ſeen fox-hounds bred out of a Newfoundland dog and fox-hound bitch; the whelps were monſtrouſly ugly, and had other bad qualities beſides. The croſs moſt likely to be of ſervice to a fox-hound is the beagle. The reaſon of croſſing the breeds ſometimes is, that the imperfections of one may ſometimes be remedied by another. The months of January, February, and March, are the beſt for breeding; late puppies ſeldom thrive. After the females begin to grow big with young, it will not be proper to let them hunt any more, or indeed to remain for a much longer time in the kennel. Sometimes theſe animals will have an extraordinary number of whelps. Mr Beckford informs us that he has known a bitch have 15 puppies at a litter; and he aſſures us, that a friend of his informed him, that a hound in his pack brought forth 16, all of them alive. In theſe caſes it is proper to put ſome of the puppies to another bitch, if you want to keep them all; but if any are deſtroyed, the beſt coloured ought to be kept. The bitches ſhould not only have plenty of fleſh, but milk alſo; and the puppies ſhould not be taken from them till they are able to take care of themſelves: their mothers will be relieved when they learn to lap milk, which they will do in a ſhort time. After the puppies are taken away from their mothers, the litter ſhould have three purging balls given them, one every other morning, and plenty of whey the intermediate day. If a bitch bring only one or two puppies, and you have another that will take them, by putting the puppies to her, the former will ſoon be fit to hunt again. She ſhould, however, be firſt phyſicked, and it will alſo be of ſervice to anoint her dugs with brandy and water.

Whelps are very liable to the diſtemper to which dogs in general are ſubject, and which frequently makes great havoc among them at their walks; and this is ſuppoſed by Mr Beckford to be owing to the little care that is taken of them. "If the diſtemper (ſays he) once get among them, they muſt all have it: yet notwithſtanding that, as they will be conſtantly well fed, and will lie warm (in a kennel built on purpoſe), I am confident it would be the ſaving of many lives. If you ſhould adopt this method, you muſt remember to uſe them early to go in couples: and when they become of a proper age, they muſt be walked out often; for ſhould they remain confined, they would neither have the health, ſhape, or underſtanding, which they ought to have. When I kept harriers, I bred up ſome of the puppies at a diſtant kennel; but having no ſervants there to exerciſe them properly, I found them much inferior to ſuch of their brethren as had the luck to ſurvive the many difficulties and dangers they had undergone at their walks; theſe were afterwards equal to any thing, and afraid of nothing; whilſt thoſe that had been nurſed with ſo much care, were weakly, timid, and had every diſadvantage attending private education. I have often heard as an excuſe for hounds not hunting a cold ſcent, that they were too *high-bred*. I confeſs I know not what that means: but this I know, that hounds are frequently too *ill-bred* to be of any ſervice. It is judgment in the breeder, and patience afterwards in the huntſman, that makes them hunt.

"When young hounds are firſt taken in, they ſhould be kept ſeparate from the pack; and as it will happen at a time of the year when there is little or no hunting, you may eaſily give them up one of the kennels and graſs court adjoining. Their play frequently ends in a battle; it therefore is leſs dangerous where all are equally matched.—If you find that they take a diſlike to any particular hound, the ſafeſt way will be to remove him, or it is probable they will kill him at laſt. When a feeder hears the hounds quarrel in the kennel, he halloos to them to ſtop them; he then goes in among them, and flogs every hound he can come near. How much more reaſonable, as well as efficacious, would it be, were he to ſee which were the combatants before he ſpeaks to them. Puniſhment would then fall, as it ought, on the guilty only. In all packs there are ſome hounds more quarrelſome than the reſt; and it is to them we owe all the miſchief that is done. If you find chaſtiſement cannot quiet them, it may be prudent to break their holders; for ſince they are not neceſſary to them for the meat they have to eat, they are not likely to ſerve them in any good purpoſe. Young hounds ſhould be fed twice a day, as they ſeldom take kindly to the kennel meat at firſt, and the diſtemper is moſt apt to ſeize them at this time. It is better not to round them till they are thoroughly ſettled; nor ſhould it be put off till the hot weather, for then they would bleed too much. It may be better perhaps to round them at their quarters, when about ſix months old; ſhould it be done ſooner, it would make their ears tuck up. The tailing of them is uſually done before they are put out; it might be better, perhaps, to leave it till they are taken in. Dogs muſt not be rounded at the time they have the diſtemper upon them, as the loſs of blood would weaken them too much.

"If any of the dogs be thin over the back, or any more quarrelſome than the reſt, it will be of uſe to cut them: I alſo ſpay ſuch bitches as I ſhall not want to breed from; they are more uſeful, are ſtouter, and

† *Eſſay on Hunting.*

are always in better order ; beſides it is abſolutely neceſſary if you hunt late in the ſpring, or your pack will be very ſhort for want of it. The latter operation, however, does not always ſucceed ; it will be neceſſary therefore to employ a ſkilful perſon, and one on whom you can depend ; for if it be ill done, though they cannot have puppies, they will go to heat notwithſtanding. They ſhould be kept low for ſeveral days before the operation is performed, and muſt be fed on thin meat for ſome time after."

It is impoſſible to determine how many young hounds ought to be bred in order to keep up the pack, as this depends altogether on contingencies. The deficiencies of one year muſt be ſupplied by the next; but it is probable, that from 30 to 35 couple of old hounds and from eight to twelve couple of young ones, will anſwer the purpoſe where no more than 40 couple are to be kept. A conſiderable number, however, ought always to be bred; for it is undoubtedly, and evidently true, that thoſe who breed the greateſt number of hounds muſt expect the beſt pack.

After the hounds have been rounded, become acquainted with the huntſman, and anſwer to their names, they ought to be coupled together, and walked out among ſheep. Such as are particularly ill natured ought to have their couples looſe about their necks in the kennel till they become reconciled to them. The moſt ſtubborn ought to be coupled to old hounds rather than to young ones ; and two dogs ſhould not be coupled together when you can avoid it. As young hounds are aukward at firſt, a few ought only to be ſet out at a time with people on foot, and they will ſoon afterwards follow a horſe. When they have been walked out often in this manner amongſt the ſheep, they ſhould be uncoupled by a few at a time, and thoſe chaſtiſed who offer to run after the ſheep ; but it will be difficult to reclaim them if they have once been allowed to taſte blood. Some are accuſtomed to couple the dogs with a ram in order to break them from ſheep ; but this is very dangerous for both parties. Mr Beckford relates a ſtory of a nobleman who put a large ram into his kennel in order to break his hounds from ſheep: but when he came ſome time after to ſee how nobly the ram defended himſelf, he found him entirely eaten up, and the hounds gone to ſleep after having filled their bellies.

When hounds are to be aired, it is beſt to take them out ſeparately, the old ones one day, and the young another: though, if they are to have whey from a diſtant dairy, both old and young may be taken out together, obſerving only to take the young hounds in couples, when the old ones are along with them. Young hounds are always apt to fall into miſchief, and even old ones when idle will be apt to join them. Mr Beckford mentions a whole pack running after a flock of ſheep through the mere accident of a horſe-falling, and then running away.

With regard to the firſt entering of hounds to a ſcent, our author gives ſuch directions as have ſubjected him to a ſevere charge of inhumanity. We ſhall give them in his own words. " You had better enter them at their own game it will ſave you much trouble afterwards. Many dogs I believe, like that ſcent beſt which they were firſt blooded to: but be this as it may, it is moſt certainly reaſonable to uſe them to that which it is intended they ſhould hunt. It may not be amiſs firſt when they begin to hunt to put light collars on them. Young hounds may eaſily get out of their knowledge ; and ſhy ones, after they have been much beaten, may not chooſe to return home. Collars, in that caſe may prevent their being loſt.—You ſay you like to ſee your young hounds run a trail-ſcent.—I have no doubt that you would be glad to ſee them run over an open down, where you could ſo eaſily obſerve their action and their ſpeed. I cannot think the doing of it once or twice could hurt your hounds ; and yet as a ſportſman I dare not recommend it to you. All that I can ſay is, that it would be leſs bad than entering them at hare. A cat is as good a trail as any, but on no account ſhould any trail be uſed after your hounds are ſtooped to a ſcent. I know an old ſportſman who enters his young hounds firſt at a cat which he drags along the ground for a mile or two, at the end of which he turns out a badger, firſt taking care to break his teeth; he takes about a couple of old hounds along with the young ones to hold them on, He never enters his young hounds but at vermin; for he ſays, Train up a child in the way he ſhould go and then when he is old he will not depart from it."

Hounds ought to be entered as ſoon as poſſible, though the time muſt be uncertain, as it depends on the nature of the country in which they are. In corn countries hunting may not be practicable till the corn is cut down ; but you may begin ſooner in graſs countries, and at any time in woodlands. " If (ſays Mr Beckford) you have plenty of foxes, and *can afford to make a ſacrifice of ſome of them* for the ſake of making your young hounds ſteady, take them firſt where you have leaſt riot, putting ſome of the ſteadieſt of your old hounds among them. If in ſuch a place you are fortunate enough to find a litter of foxes, you may aſſure yourſelf you will have but little trouble with your young hounds afterwards.—If, owing to a ſcarcity of foxes, you ſhould ſtoop your hounds at hare, let them by no means have the blood of her ; nor, for the ſake of conſiſtency, give them much encouragement. Hare-hunting has one advantage; ——hounds are chiefly in open ground, where you can eaſily command them ; but notwithſtanding that, if foxes be in tolerable plenty keep them to their own game —Frequent hallooing is of uſe with young hounds, it keeps them forward, prevents their being loſt, and hinders them from hunting after the reſt. The oftener therefore that a fox is ſeen and hallooed, the better. I by no means, however, approve of much hallooing to old hounds ; though it is true that there is a time when hallooing is of uſe, a time when it does hurt, and a time when it is perfectly indifferent : but long practice and great attention to hunting can only teach the application.

" Hounds at their firſt entrance cannot be encouraged too much. When they are become handy, love a ſcent, and begin to know what is right, it will then be ſoon enough to chaſtiſe them for what is wrong; in which caſe one ſevere beating will ſave a great deal of trouble. When a hound is flogged, the whipper-in ſhould make uſe of his voice as well as his whip. If any be very unſteady, it will not be amiſs to ſend them out by themſelves when the men go out to exerciſe their horſes If you have hares in plenty, let ſome be found ſitting and turned out before them ; and you will find that the moſt riotous will not run after them. If you intend them to be ſteady from deer, they ſhould often ſee deer, and then they will not regard them; and if after a probation of this kind you turn out a cub before them with ſome old hounds to lead them on, you may aſſure yourſelf they will not be unſteady long."

It is proper to put the young hounds into the pack when they ſtoop to a ſcent, become handy, know a rate, and ſtop eaſily. A few only are to be put to the pack at a time: and it is not adviſable even to begin this till the pack have been out a few times by themſelves, and "are gotten well in blood." They ſhould be low in fleſh when you begin to hunt; the ground being generally hard at that time, ſo that they are liable to be ſhaken.—By hounds being *handy*, our author means their being ready to do whatever is required of them; and particularly, when caſt, to turn eaſily which way the huntſman pleaſes.

Mr Beckford begins to hunt with his young hounds in Auguſt. The huntſman in the preceding months keeps his old hounds healthy by giving them proper exerciſe, and gets his young hounds forward; and for this purpoſe nothing anſwers ſo well as taking them frequently out. The huntſman ſhould go along with them, get frequently off his horſe, and encourage them to come to him:—too much reſtraint will frequently incline the hounds to be riotous. Our author frequently walks out his hounds among ſheep, hares, and deer. Sometimes he turns down a cat before them, which they kill: and when the time of hunting approaches he turns out young foxes or badgers; taking out ſome of the moſt ſteady of his old hounds to lead on the young ones. Small covers and furze-brakes are drawn with them to uſe them to a halloo, and to teach them obedience. If they find improper game and hunt it, they are ſtopped and brought back; and as long as they will ſtop at a rate, they are not to be chaſtiſed. At ſuch times as they are taken out to air, the huntſman leads them into the country in which they are deſigned to hunt; by which means they acquire a knowledge of the country, and cannot miſs their way home at any time afterwards. When they begin to hunt, they are firſt brought into a larger cover of his own which has many ridings cut in it; and where young foxes are turned out every year on purpoſe for them. After they have been hunted for ſome days in this manner, they are ſent to more diſtant covers, and more old hounds added to them. There they continue to hunt till they are taken into the pack, which is ſeldom later than the beginning of September; for by that time they will have learned what is required of them, and ſeldom give much trouble afterwards. In September he begins to hunt in earneſt; and after the old hounds having killed a few foxes, the young ones are put into the pack, two or three couple at a time, till all have hunted. They are then divided; and as he ſeldom has occaſion to take in more than nine or ten couple, one half are taken out one day, and the other the next, till they are ſteady.

To render fox hunting complete, no young hounds ſhould be taken into the pack the firſt ſeaſon;---a requiſite too expenſive for moſt ſportſmen. The pack ſhould conſiſt of about 40 couple of hounds, that have hunted one, two, three, four, or five ſeaſons. The young pack ſhould conſiſt of about 20 couple of young hounds, and an equal number of old ones. They ſhould have a ſeparate eſtabliſhment, and the two kennels ſhould not be too near one another. When the ſeaſon is over the beſt of the young hounds ſhould be taken into the pack, and the draught of old ones exchanged for them. Many muſt be bred to enable a ſportſman to take in 20 couple of young hounds every ſeaſon. It will always be eaſy to keep up the number of old hounds; for when your own draft is not ſufficient, drafts from other packs may be obtained, and at a ſmall expence. When young hounds are hunted together for the firſt ſeaſon, and have not a ſufficient number of old ones along with them, it does more harm than good,

Kennel for HOUNDS. See KENNEL.

HOUNSLOW, a town of Middleſex, 10 miles from London. It is ſituated on a heath of the ſame name; and belongs to two pariſhes, the north ſide of the ſtreet to Heſton, and the ſouth ſide to Iſleworth. It is ſituated on the edge of a heath of the ſame name, and near it are powder-mills. It has fairs on Trinity-Monday, and Monday after September 29. Here is a charity-ſchool and a chapel. In this place was formerly a convent of mendicant friars, who by their inſtitution, were to beg alms for the ranſom of captives taken by the infidels.—The heath is noted for robberies and horſe-races.

HOU-QUANG, a province of China, occupying nearly the centre of the empire: the river Yang-tſe-kiang traverſes it from weſt to eaſt, and divides it into two parts, the northern and ſouthern. This province (the greater part of which is level, and watered by lakes, canals, and rivers) is celebrated for its fertility; the Chineſe call it the ſtore-houſe of the empire; and it is a common ſaying among them, that "the abundance of Kiang-ſi could furniſh all China with a breakfaſt; but the province of Hou-quang alone could ſupply enough to maintain all its inhabitants." Some princes of the race of Hong-viou formerly reſided in this province; but this family was entirely deſtroyed by the Tartars when they conquered China. The people here boaſt much of their cotton cloths, ſimples, gold-mines, wax, and paper made of the bamboo-reed. The northern part of the province contains eight *fou*, or cities of the firſt claſs, and ſixty of the ſecond and third. The ſouthern comprehends ſeven of the firſt claſs, and fifty-four of the ſecond and third, excluſive of all ſorts towns and villages, which are every where to be found.

HOUR, in chronology, an aliquot part of a natural day, uſually a 24th, but ſometimes a 12th. The origin of the word *hora*, or ωρα, comes according to ſome authors, from a ſurname of the ſun, the father of hours, whom the Egyptians call *Horus*. Others derive it from the Greek οριζειν, to *terminate*, *diſtinguiſh*, &c. Others from the word υρον *urine*; holding, that Triſmegiſtus was the firſt that ſettled the diviſion of hours, which he did from obſervation of an animal conſecrated to Serapis, named *cynocepalus*, which makes water 12 times a-day, and as often in the night, at equal intervals.

An hour, with us, is a meaſure or quantity of time, equal to a 24th part of the natural day, or nycthemeron; or the duration of the 24th part of the earth's diurnal rotation. Fifteen degrees of the equator anſwer to an hour; though not preciſely, but near enough for common uſe. It is divided into 60 minutes; the minute into 60 ſeconds, &c.

The diviſion of the day into hours is very ancient: as is ſhown by Kircher, *Oedipt. Ægypt.* Tom. II. P. II. claſſ. VII. c. 8.: though the paſſages he quotes from Scripture do not prove it.—The moſt ancient hour is that of the 12th part of the day. Herodotus, lib. ii. obſerves, that the Greeks learnt from the Egyptians, among other things, the method of dividing the day into twelve parts.—The aſtronomers of Cathaya, &c. biſhop Beveridge obſerves, ſtill retain this diviſion. They call the hour *chag*; and to each chag give a peculiar name, taken from ſome animal: The firſt is called *zeth*, "mouſe;" the ſecond, *chiu*, "bullock;" the third, *zem*, "leopard;" the fourth, *mau*, "hare;" the fifth, *chiu*, "crocodile," &c.

The diviſion of the day into 24 hours, was not known to the Romans before the firſt Punic war.—Till that time they only regulated their days by the riſing and ſetting of the ſun. They divided the 12 hours of their day into four, viz. *prime*, which commenced at ſix o'clock; *third*, at nine; *ſixth*, at twelve, and *none*, at three. They alſo divided the night into four watches, each containing three hours.

HOURS, Horæ, in the ancient mythology, were certain goddeſſes, the daughters of Jupiter and Themis; at firſt only three in number, Eunomia, Dice, and Irene; to which were afterwards added two more, Carpo and Thallote.

Homer makes them the doorkeepers of heaven. Ovid allots them the employment of harneſſing the ſun:

> *Jungere equos Titan velocibus imperat* Horis.

And ſpeaks of them as ſtanding, at equal diſtances, about the throne of Sol:

> —*et, poſitæ ſpatiis equalibus*, Horæ.

The poets repreſent them as dreſſed in fine coloured or embroidered robes, and gliding on with a quick and eaſy motion.

Hours, *Horæ*, in the Romiſh, church, are certain prayers performed at ſtated times of the day: as mattins, veſpers, lauds, &c.—The leſſer hours are, *prime*, *tierce*, *ſixth*, and *none*. They are called *hours*, or *canonical hours*, as being to be rehearſed at certain hours preſcribed by the canons of that church, in commemoration of the myſteries accompliſhed at thoſe hours. Theſe hours were anciently alſo called *courſe*, *curſus*; F. Mabillon has a diſſertation on them, intitled, *De Curſu Gallicano*.

The firſt conſtitution enjoining the obſervation of the canonical *hours*, is of the ninth century, being found in a capitular of Heito biſhop of Baſil directed to his curates, importing that the prieſts ſhall never be abſent at the canonical hours either by day or night.

Hour-Glaſs, a popular kind of chronometer or clepſydra, ſerving to meaſure the flux of time by the deſcent or running of ſand out of one glaſs veſſel into another. The beſt hour-glaſſes are thoſe which, inſtead of ſand, have egg-ſhells well dried in the oven, then beaten fine and ſifted.—Hour-glaſſes are much uſed at ſea for reckoning, &c.

HOURIS, in modern hiſtory, is a name given by the Mahometans to thoſe females that are deſigned for the faithful in paradiſe. Theſe are not the ſame with whom they have lived on earth, but formed for this purpoſe with ſingular beauty and undecaying charms.

HOUSE, a habitation, or place built with conveniences for dwelling in. See Architecture.

Houses, amongſt the Jews, Greeks, and Romans, were flat on the top for them to walk upon, and had uſually ſtairs on the outſide, by which they might aſcend and deſcend without coming into the houſe. Each houſe, in fact, was ſo laid out, that it incloſed a quadrangular area or court. This court was expoſed to the weather, and being open to the ſky, gave light to the houſe. This was the place where company was received, and for that purpoſe it was ſtrewed with matts or carpets for their better accommodation. It was paved with marble or other materials, according to the owner's ability, and provided with an umbrella of vellum to ſhelter them from the heat and inclemencies of the weather. This part of their houſes, called by the Romans *impluvium*, or *cava ædium*, was provided with channels to carry off the water into the common ſewers. The top of the houſe was level, and covered with a ſtrong plaſter by way of terrace. Hither, eſpecially amongſt the Jews, it was cuſtomary to retire for meditation, private converſe, devotion, or the enjoyment of the evening breezes.

The Grecian houſes were uſually divided into two parts, in which the men and women had diſtinct manſions aſſigned. The part aſſigned to the men was towards the gate, and called Ανδρωνιτις the apartment of the women was the fartheſt part of the houſe, and called Γυγαικωνιτις. Jews, Greeks, and Romans, ſuppoſed their houſes to be polluted by dead bodies, and to ſtand in need of purification.

House is alſo uſed for one of the eſtates of the kingdom of Britain aſſembled in parliament. Thus we ſay, the houſe of lords, the houſe of commons, &c. See Peers, commons, &c.

House is alſo uſed for a noble family, or a race of illuſtrious perſons iſſued from the ſame ſtock. In this ſenſe we ſay, the houſe or family of the Stuarts, the Bourbons, the houſe of Hanover, of Auſtria, of Lorrain, of Savoy, &c.

Cheap, eaſy, and expeditious Method of conſtructing Houses, which have been found to be very uſeful hoſpitals for the recovery of the ſick, and therefore may probably make very wholſome places of reſidence for the healthy. The firſt thing to be done is to chooſe a dry and airy ſituation, on a gravelly or chalky ſoil if poſſible; upon this lay down the plan of your building, make one end of it face that quarter from whence the pureſt and healthieſt winds may be expected to blow, of a breadth that can be conveniently roofed. Then, if boarding does not come ſo cheap, drive ſtakes, at about ſix feet diſtance from each other, into the ground, ſo as to ſtand about ſix feet above it; and, interlacing them with wattles, coat the wattles on the ſide next the weather with freſh ſtraw; and make the roof in the ſame manner, but thicker, or of thatch, in the uſual way, with a hole at the very top of it, to open occaſionally. Let the end of the building facing the wholeſomeſt quarter lie open ſome feet back, ſo as to form a porch, where the convaleſcents may take the air without danger of any injury from the weather. A large chimney and kitchen grate may be erected at the other end. If the ſoil happens to be chalky or gravelly, you may hollow it four or five feet deep, within a foot or eighteen inches of the walls; but let the ſteps into this hollow lie far enough within the porch, that no water may get into it, and, if of chalk, the ſteps may not grow ſlippery in wet weather. From time to time open the vent-hole at the roof; by means of which all the unwholſome infectious air, as being warmer, and conſequently lighter, than that which is pure and wholeſome, will be driven out by the ruſhing in of the freſh air: a purpoſe, which the little openings, that may be left in the ſides and roofs of ſuch rude and haſty buildings, will, even of themſelves, anſwer ſo well, as ſufficiently to compenſate any cold they may let in, even in the coldeſt months. Let the floor likewiſe be ſcraped three or four inches deep every five or ſix days, and what comes off removed to ſome diſtance. Halls of this kind, 50 feet long and 20 broad, coſt but a trifle to build; yet, with theſe precautions (even without the addition of clean ſtraw for every new patient to lie on, incloſed in clean waſhed ſacks fit for the purpoſe, which come infinitely cheaper than the bare cleaning of flock or even feather beds, ſuppoſing it poſſible to waſh ſuch beds), proved of infinitely more advantage in the recovery of ſick ſoldiers, than the low-roofed rooms of the farm-houſes of the Iſle of Wight, or even the better accommodations of Cariſbrooke caſtle in the ſame iſland, in which there periſhed four times the number of ſick that there did in theſe temporary receptacles; which were firſt thought of by doctor Brockleſby on occaſion of ſome terrible infections from confined animal effluvia.

Is it not ſurpriſing, that we have not availed ourſelves more of the above diſcovery in natural hiſtory, being, perhaps, the moſt important the moderns can boaſt of, in the moſt uſeful ſcience, viz. the ſuperior lightneſs of unwholſome and infectious air! The upper ſaſhes in moſt houſes, even of thoſe who pretend to ſome knowledge in theſe matters, are generally immoveable, by means of which no part of the foul air above the level of the loweſt rail of the other ſaſhe's greateſt riſe can eſcape by the window; and, if it eſcapes by the doors, it is generally for want of a vent in the higheſt part of the roof, merely to accumulate in the upper ſtory of the houſe, and add to the infection, which the great quantities of old furniture uſually ſtored up there are of themſelves but too apt to create, when care is not frequently taken to open the windows of it. Thus, the chief benefit to be expected from lofty rooms is in a great meaſure loſt. Whereas, were the upper ſaſhes contrived to come down, all the air might be eaſily changed, and that almoſt inſenſibly, by letting them down an inch or two. Nay, the upper ſaſh might be often let entirely down, with leſs danger or inconvenience from cold, than the lower thrown up the tenth part of an inch, though the doing of the former would be attended with infinitely more advantage to the health of the inhabitants than the latter. It is, perhaps, on this principle, that we are to account for the good health enjoyed by the poor who live crowded in damp cellars, and often with great numbers of rabbits, poultry, and even ſwine about them. Theſe cellars are open to the ſtreet, with doors reaching from the floor to the very ceiling, but never ſo cloſe at bottom or at top as to prevent a free circulation of air; in conſequence of which, that all vivifying fluid, as faſt as it is ſpoiled by paſſing through the lungs of the inhabitants and their ſtock, or is infected by their inſenſible perſpiration, excrements, &c. is driven out and replaced by the freſh air.

House, in aſtrology, denotes the twelfth part of the heavens.

The diviſion of the heavens into houſes, is founded upon the pretended influence of the ſtars, when meeting in them, on all ſublunary bodies. Theſe influences are ſuppoſed to be good or bad; and to each of theſe houſes particular virtues are aſſigned, on which aſtrologers prepare and form a judgment of their horoſcopes. The horizon and meridian are two circles of the celeſtial houſes, which divide the heavens into four equal parts, each containing three houſes; ſix of which are above the horizon and ſix below it; and ſix of theſe are called *eaſtern* and ſix *weſtern houſes*.

A ſcheme or figure of the heavens is compoſed of 12 triangles, all called *houſes*, in which is marked the ſtars, ſigns, and planets, ſo included in each of theſe circles. Every planet has likewiſe two particular houſes, in which it is pretended that they exert their influence in the ſtrongeſt manner; but the ſun and moon have only one, the houſe of the former being Leo, and that of the latter Cancer.

The houſes in aſtrology have alſo names given them according to their qualities. The firſt is the houſe of life: this is the aſcendant, which extends five degrees above the horizon, and the reſt below it. The ſecond is the houſe of riches: the third, the houſe of brothers: the fourth, in the loweſt part of the heavens is, the houſe of relations, and the angle of the earth; the fifth, the houſe of children: the ſixth, the houſe of health: the ſeventh, the houſe of marriage, and the angle of the weſt: the eighth, the houſe of death: the ninth, the houſe of piety: the tenth, the houſe of offices; the eleventh, the houſe of friends: and the twelfth, the houſe of enemies.

Country-House, is the *villa* † of the ancient Romans the *quinta* of the Spaniards and Portugueſe, the *cloſerie* and *caſſine* of the French, and the *vigna* of the Italians.

† See *Villa.*

It ought always to have wood and water near it; theſe being the principal beauties of a rural ſeat. The trees make a far better defence than hills, as they yield a cooling and healthy air, ſhade during the heat of ſummer, and very much break the ſeverities of the winter ſeaſon.

It ſhould not be ſituated too low, on account of the moiſture of the air; and, on the other hand, thoſe built on places expoſed to the winds, are expenſive to keep in repair. In houſes not above two ſtories high, and upon a good foundation, the length of two bricks, or 18 inches, for the heading courſe, will be ſufficient for the ground-work of any common ſtructure; and ſix or ſeven courſes above the earth, to a water-table, where the thickneſs of the walls are abated or taken in, on either ſide the thickneſs of a brick, *viz.* two inches and a quarter. But for large and high houſes of three, four, or five ſtories, with garrets, their walls ought to be three heading courſes of bricks, or 28 inches at leaſt, from the foundation to the firſt water-table; and at every ſtory a water-table, or taking in, on the inſide, for the ſummers, girders, and joiſts to reſt upon, laid into the middle, or one quarter of the wall at leaſt, for the better bond. But as for the partition-wall, a brick and half will be ſufficiently thick; and for the upper ſtories, a brick length or nine inch brick will ſuffice.

Hot-House See Stove and Hypocaustum.

Houſe-Breaking, or *Robbing*, is the breaking into and robbing a houſe in the day-time; the ſame crime being termed BURGLARY when done by night: both are felony without benefit of clergy.

HOUSEHOLD, the whole of a family conſidered collectively, including the miſtreſs, children, and ſervants. But the houſehold of a ſovereign prince includes only the officers and domeſtics belonging to his palace.

The principal officers of his Britannic majeſty's houſehold are, the lord ſteward, lord chamberlain of the houſehold, the groom of the ſtole, the maſter of the great wardrobe, and the maſter of the horſe.

The civil government of the king's houſe is under the care of the lord ſteward of the king's houſehold; who, being the chief officer, all his commands are obſerved and obeyed. His authority extends over all the other officers and ſervants, except thoſe of his majeſty's chapel, chamber, and ſtable, and he is the judge of all crimes committed either within the court or the verge.

Under him are the treaſurer of the houſehold, the comptroller, cofferer, the maſter of the houſehold, the clerks of the green cloth, and the officers and ſervants belonging to the accounting-houſe, the marſhalſea, the verge, the king's kitchen, the houſehold kitchen, the acatery, bake-houſe, pantry, buttery, cellar, paſtry, &c. Next to the lord ſteward is the lord chamberlain of the houſehold, who has under him the vice-chamberlain, the treaſurer, and comptroller of the chamber; 48 gentlemen of the privy chamber, 12 of whom wait quarterly, and two of them lie every night in the privy-chamber; the gentleman uſher, the grooms of the great chamber, the pages of the preſence-chamber; the mace-bearers, cup-bearers, carvers, muſicians, &c. See *Lord* CHAMBERLAIN *of the Houſehold*.

The groom of the ſtole has under him the 11 other lords of the bed-chamber, who wait weekly in the bed-chamber, and by turns lie there a-nights on a pallet-bed; and alſo the grooms of the bed-chamber, the pages of the bed-chamber and back-ſtairs, &c. See *Groom of the* STOLE.

The maſter or keeper of the great wardrobe has under him a deputy, comptroller, clerk of the robes, bruſher, &c, and a number of tradeſmen and artificers, who are all ſworn ſervants to the king.

The maſter of the horſe has under his command the equerries, pages, footmen, grooms, coachmen, farriers, ſaddlers, and all the other officers and tradeſmen employed in his majeſty's ſtables.

Next to the civil liſt of the king's court, is the military, conſiſting of the band of gentlemen penſioners, the yeomen of the guard, and the troops of the houſehold; of which the two firſt guard the king above ſtairs.

When the king dines in public, he is waited upon at table by his majeſty's cup-bearers, carvers, and gentlemen ſewers; the muſicians playing all the time. The dinner is brought up by the yeomen of the guard, and the gentlemen ſewers ſet the diſhes in order. The carvers cut for the king, and the cup-bearers ſerve him the drink with one knee on the ground, after he has firſt taſted it in the cover.

House and Window Duty, a branch of the king's extraordinary revenue*.—As early as the conqueſt mention is made in domeſday book of fumage or fugage, vulgarly called *ſmoke-farthings*; which were paid by cuſtom to the king for every chimney in the houſe. And we read that Edward the Black Prince (ſoon after his ſucceſſes in France), in imitation of the Engliſh cuſtom, impoſed a tax of a florin upon every hearth in his French dominions. But the firſt parliamentary eſtabliſhment of it in England was by ſtatute 13 & 14 Car. II. c. 10. whereby an hereditary revenue of 2s. for every hearth, in all houſes paying to church and poor, was granted to the king for ever. And, by ſubſequent ſtatutes, for the more regular aſſeſſment of this tax, the conſtable and two other ſubſtantial inhabitants of the pariſh, to be appointed yearly (or the ſurveyor appointed by the crown, together with ſuch conſtable or other public officer), were, once in every year, empowered to view the inſide of every houſe in the pariſh. But, upon the Revolution, by ſtat. 1. W. & M. c. 10. hearth-money was declared to be "not only a great oppreſſion to the poorer ſort, but a badge of ſlavery upon the whole people, expoſing every man's houſe to be entered into and ſearched at pleaſure, by perſons unknown to him; and therefore, to erect a laſting monument of their majeſties goodneſs, in every houſe in the kingdom the duty of hearth-money was taken away and aboliſhed." This monument of goodneſs remains in Britain to this day: but the proſpect of it was ſomewhat darkened, when in ſix years afterwards by ſtatute 7 W. III. c. 18. a tax was laid upon all houſes (except cottages) of 2*s.* now advanced to 3s. *per* houſe, and a tax alſo upon all windows, if they exceeded nine, in ſuch houſe. Which rates have been from time to time varied, being now extended to all windows exceeding ſix; and power is given to ſurveyors, appointed by the crown, to inſpect the outſide of houſes, and alſo to paſs through any houſe, two days in the year, into any court or yard, to inſpect the windows there.

Schemes of the different rates of duty upon houſes and windows may be ſeen in the *Almanacks*, or in *Kearſley*'s *Tax-Tables* publiſhed yearly.

House-Leek, in botany. See SEDUM and SEMPERVIVUM.

HOUSING, or *House-Line*, in the ſea-language, a ſmall line, formed of three fine ſtrands or twiſts of hemp, ſmaller than rope yarn. It is chiefly uſed to ſeize blocks into their ſtrops, to bind the corners of the ſails, or to faſten the bottom of a ſail to its bolt-rope, &c. See *Bolt-Rope*.

HOUSING, or *Houſee*, a cover laid over the ſaddle of a horſe, in order to ſave it from the weather, dirt, &c. The word is formed of the French *houſee*, which ſignifies the ſame thing; though it anciently denoted a kind of hood worn by country people.—The cavaliers appeared with their embroidered houſings.

HOUSING, among bricklayers, a term uſed for a brick which is warped, or is caſt crooked or hollow in burning; in ſuch a caſe, they ſay it is *houſing*.

HOUSTONIA, in botany; a genus of the monogynia order, belonging to the tetrandria claſs of plants; and in the natural method ranking under the 47th order, *Stellatæ*. The corolla is monopetalous and funnel-ſhaped; the capſule bilocular, diſpermous, ſuperior.

HOU-TCHEOU-FOU, a city of China, in the province of Tche-kiang. It is a city of the firſt claſs; and is ſituated on a lake, from which it takes its name. The quantity of ſilk manufactured here is almoſt incredible.

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* See *Revenue*.

dible. To give ſome idea of it, we ſhall only ſay, that the tribute paid by a city under its juriſdiction, named *Te-tſin-hien*, amounts to more than 500,000 *taëls* or ounces of ſilver. Its diſtrict contains ſeven cities, one of which is of the ſecond, and ſix of the third claſs.

HOWARD (Henry), earl of Surry, a ſoldier and a poet, the ſon and grandſon of two lord treaſurers, dukes of Norfolk, was born probably about the year 1520, and educated at Windſor caſtle, with young Fitzroy, earl of Richmond, natural ſon to king Hen. VIII. Wood ſays, from tradition, that he was ſome time a ſtudent at Cardinal College, Oxford. In his youth he became enamoured of the fair Geraldine, whom his ſonnets have immortalized. In 1532, Howard with his companion Richmond was at Paris, where they continued ſome time. The latter died in 1536; after which our young hero made a tour to Italy, and at Florence, like a true *enamorato*, publiſhed a challenge againſt all comers, whether Chriſtians, Jews, Saracens, Turks, or cannibals, in defence of the beauty of his fair Geraldine; and was victorious in the tournament inſtituted by the grand duke on the occaſion. The duke, we are told, was ſo charmed with his gallant exploits, that he would gladly have retained him at his court; but he rejected the invitation, being determined to maintain the ſuperlative beauty of his Geraldine in all the principal cities in Italy. This romantic reſolution was however fruſtrated by the command of his ſovereign, Henry VIII. to return to England.

In 1540, he ſignalized himſelf in a tournament at Weſtminſter, againſt Sir John Dudley, Sir Thomas Seymour, and others. In 1542, he marched, under the command of his father, againſt the Scots; and in the ſame year was confined at Windſor caſtle for eating fleſh in Lent, contrary to the king's proclamation. In 1544, on the expedition to Boulogne in France, he was appointed field-marſhal of the Engliſh army; and after the taking of that town, in 1546, made captain-general of the king's forces in France. He was at this time knight of the garter. In the ſame year, attempting to intercept a convoy, he was defeated by the French, and ſoon after ſuperſeded in his command by the earl of Hertford.

Surry, after his return to England, conſcious of his former ſervices, and peeviſh under his diſgrace, could not help reflecting on the king and council. This was his firſt ſtep towards deſtruction. He had married Frances, the daughter of John earl of Oxford; and, after her death, is ſaid to have made love to the princeſs Mary. For this the Seymours, rivals of the Norfolk family, and now in favour with the king, accuſed him of aſpiring to the crown; adding, that he already preſumed to quarter part of the royal arms with his own; but, whatever might be the pretence, the cauſe of his ruin was the jealouſy and power of his enemies. In ſhort, the deſtruction of the Howards being determined, Surry, and his father the duke of Norfolk, were committed to the Tower, in December 1546; and on the 13th of January following, Surry was tried at Guild-hall by a common jury, and beheaded on Tower-hill on the 19th day of the ſame month, nine days before the death of the king; who thus, that the meaſure of his crimes might be full, finiſhed his life with the murder of his beſt ſubject. The accuſations brought againſt this amiable and innocent young nobleman on his trial, were ſo extremely ridiculous, that one is aſtoniſhed how it was poſſible, even in the moſt deſpotic reign, to find a judge and jury ſo puſillanimouſly villanous as to carry on the farce of juſtice on the occaſion. The Britiſh boaſt of their excellent conſtitution, and their trial by juries; but this example may teach them, that their conſtitution and their juries are not incompatible with deſpotic monarchy. He was firſt interred in the church of All-hallows, Barkin, near Tower-hill; and afterwards, in the reign of king James I. removed to Farmingham in Suffolk, by his ſon Henry earl of Northampton.

As to the character of this unfortunate earl, all the Britiſh poets have ſung his praiſe. Mr Walpole begins his anecdotes of Surry with theſe words: "We now emerge from the twilight of learning to an almoſt claſſic author, that ornament of a boiſterous, yet not unpoliſhed court, the earl of Surry, celebrated by Drayton, Dryden, Fenton, Pope, illuſtrated by his own muſe, and lamented for his unhappy death: a man (as Sir Walter Raleigh ſays) no leſs valiant than learned, and of excellent hopes." Leland calls him the conſcript enrolled heir of Sir Thomas Wyatt, the elder, in his learning and other excellent qualities; and the author of *The Art of Engliſh Poetry* ſays, that the earl of Surry, and Sir Thomas Wyatt, may be juſtly called the *reformers of our poetry and ſtyle*. His poems were publiſhed in 1557, 12mo; and in 1565, 1574, 1585, 1587, 8vo. Several of the ſonnets are by Sir Thomas Wyatt and others.

Howard (Charles), an able ſtateſman and experienced ſeaman, was the ſon of lord William Howard, baron of Effingham, and born in 1536. He ſerved under his father, who was lord high admiral of England, till the acceſſion of queen Elizabeth. In January 1573, he ſucceeded his father in his title and eſtate: after which he ſucceſſively became chamberlain of the houſehold and knight of the garter; and in 1585 was made lord high admiral, at that critical juncture when the Spaniards were ſending their Armada, in their opinion, to the aſſured conqueſt of that kingdom. When he received intelligence of the approach of the Spaniſh fleet, and ſaw the prodigious conſequence it was to get out the few ſhips that were ready at Plymouth, he not only gave orders in every thing himſelf, but wrought alſo with his own hands, and the firſt night left the port with ſix ſhips. The next morning, though he had only 30 ſail, and thoſe the ſmalleſt of the fleet, he attacked the Spaniſh navy; but firſt diſpatched his brother-in-law, Sir Edward Hobby, to the queen to deſire her to make the proper diſpoſition of her land-forces for the ſecurity of the coaſt, and to haſten as many ſhips as poſſible to his aſſiſtance. His valour was conſpicuouſly diſplayed in his repeated attacks of a ſuperior enemy. The coolneſs of his temper was no leſs conſpicuous; and it was owing to his magnanimity and prudence that the victory was ſo great. The queen expreſſed her ſenſe of his merit in the moſt honourable terms; and granted him a penſion for life. In 1596, he commanded in chief at ſea, as Eſſex did by land, the forces ſent againſt Spain, when his prudence and moderation were among the principal cauſes of the ſucceſs the Engliſh met with in that great and glorious enterprize; ſo that, upon his return the next year, he was advanced to the dignity of earl of Nottingham.

The next eminent ſervice in which his lordſhip was engaged was in 1599, when the Spaniards ſeemed to meditate a new invaſion. Her majeſty, who always placed her ſafety in being too quick for her enemies, drew together, in a fortnight's time, ſuch a fleet, and ſuch an army, as took away all appearance of ſucceſs from her foreign and domeſtic enemies; and ſhe gave the earl the ſole and ſupreme command of both the fleet and army, with the title of *lord lieutenant general of all England*, an office unknown in ſucceeding times. When age and infirmity had unfitted him for action, he reſigned his office, and ſpent the remaining part of his life in eaſe and retirement, till the time of his deceaſe, which happened in 1624, in the 87th year of his age.

Howard (John), Eſq. a man of ſingular and tranſcendent humanity was the ſon of a reputable tradeſman in St Paul's church yard. He was born about the year 1725 or 1726; and at a proper age was put an apprentice to Mr Nathaniel Newnham, wholeſale grocer in Watling ſtreet. His father died, leaving only his ſon and a daughter, to both of whom he bequeathed handſome fortunes: and by his will directed that his ſon ſhould not be conſidered of age till he was five and twenty. His conſtitution was thought very weak, and his health appeared to have been injured by the neceſſary duties of his apprenticeſhip; and therefore at the expiration of it, he took an apartment in a lodging-houſe in Church-ſtreet, Stoke Newington, Middleſex; but not meeting with the tendereſt treatment there, he removed to another lodging-houſe in the ſame ſtreet, which was kept by a widow lady Mrs Sarah Lardeau, a worthy ſenſible woman, but an invalid. Here he was nurſed with ſo much care and attention, that he reſolved to marry his landlady out of gratitude for her kindneſs. In vain ſhe expoſtulated with him upon the extravagance of ſuch a proceeding, he being about 28 and ſhe about 51 years of age, and 20 years older in conſtitution: but nothing could alter his reſolution, and they were privately married about the year 1752. She was poſſeſſed of a ſmall fortune, which he preſented to her ſiſter. During his reſidence at Newington, the miniſter of the diſſenting meeting-houſe there reſigned his office and a ſucceſſor was elected; and Mr Howard, who was bred a diſſenter, and ſtedfaſtly adhered all his life to that profeſſion, propoſed to purchaſe the leaſe of a houſe near the meeting-houſe, and to appropriate it as a parſonage-houſe for the uſe of the miniſter for the time being, and contributed 50*l.* for that purpoſe. His wife died November 10. 1755, aged 54; and he was a ſincere and affectionate mourner for her death. About this time, it is believed, he was elected F. R. S. In the year 1756 he had the fortune to experience ſome of the evils which it afterwards became the buſineſs of his life to redreſs. He embarked that year in a Liſbon packet, the Hanover, in order to make the tour of Portugal; when the veſſel was taken by a French privateer. "Before we reached Breſt (ſays he*) I ſuffered the extremity of thirſt, not having for above 40 hours one drop of water, nor hardly a morſel of food. In the caſtle at Breſt I lay ſix nights upon ſtraw; and obſerving how cruelly my countrymen were uſed there and at Morlaix, whither I was carried next, during the two months I was at Carhaix upon parole, I correſponded with the Engliſh priſoners at Breſt, Morlaix, and Dinnan: at the laſt of theſe towns were ſeveral of our ſhip's crew, and my ſervant. I had ſufficient evidence of their being treated with ſuch barbarity, that many hundreds had periſhed, and that 36 were buried in a hole at Dinnan in one day. When I came to England, ſtill on parole, I made known to the commiſſioners of ſick and wounded ſeamen the ſundry particulars, which gained their attention and thanks. Remonſtrance was made to the French court: our ſailors had redreſs; and thoſe that were in the three priſons mentioned above were brought home in the firſt cartel ſhips.—Perhaps (adds Mr Howard) what I ſuffered on this occaſion increaſed my ſympathy with the unhappy people whoſe caſe is the ſubject of this book."

He afterwards, it is ſaid, made the tour of Italy; and at his return ſettled at Brokenhurſt, a retired and pleaſant villa in the New Foreſt, near Lymington in Hampſhire, having, April 25. 1758, married a daughter of Edward Leeds, Eſq. of Croxton, Cambridgeſhire, king's ſerjeant. This lady died in 1765 in child-bed, of her only child, a ſon, who unfortunately became lunatic. After her death Mr Howard left Lymington, and purchaſed an eſtate at Cardington, near Bedford.

"While he lived here in retirement (ſays Mr Palmer ‡), it was his meat and drink to make his neighbours happy. His neat but humble manſion was ever hoſpitable to a few ſelect friends, but was never the ſcene of riot or luxurious banqueting. Though polite to all, he neither ſought nor admitted the company of the profligate, however diſtinguiſhed by rank or fortune.—His charity had no bounds, except thoſe of prudence; and was not more commendable for the extent of it, than for the manner in which it was exerciſed. He gave not his bounty to countenance vice and idleneſs, but to encourage virtue and induſtry. He was ſingularly uſeful in furniſhing employment for the labouring poor of both ſexes, at thoſe ſeaſons when a ſcarcity of work rendered their ſituation moſt compaſſionable. And at other times, though never inattentive to the tale of woe, he was not eaſily impoſed upon by it, but made himſelf acquainted with the caſe. He had indeed a general acquaintance with the caſes and characters of the poor around him, and made it his buſineſs to viſit the abodes of affliction. In circumſtances of bodily diſorder he often acted the part of a phyſician as well as a friend. But his kindneſs was not confined to the bodies of his fellow-creatures, it extended to their ſpiritual and immortal part. He carefully watched over the morals of his neighbourhood, and uſed his advice, his admonitions, and influence, to diſcountenance immorality of all kinds, and to promote the knowledge and practice of religion. As a moſt effectual means to this great end, he provided for the inſtruction of poor children, by erecting and ſupporting ſchools, which he carefully ſuperintended. In ſhort, he was a univerſal bleſſing to the village where he reſided, in every part of which are to be ſeen the pleaſing monuments of his munificence and taſte.—His liberality extended alſo to adjacent places, in which there are many who will call him bleſſed. Nor was it confined to perſons of his own religious perſuaſion, but comprehended the neceſſitous and deſerving of all parties; while he was particularly uſeful in ſerving the intereſt of the Chriſtian ſociety to which he belonged. What wonder if ſuch a man were univerſally beloved ? Was it poſſible he ſhould have an enemy ? One however he had (and I never heard of more), an idle and diſſolute wretch, who, having been often reproved by him for his vices, formed the deſperate reſolution to murder him as he was going to public worſhip, which he almoſt always did on foot. But Providence remarkably interpoſed to preſerve ſo valuable a life, by inclining him that morning to go on horſeback a different road."

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* *On Priſons*, 4to. 1784, p. 11.

‡ *Funeral Sermons on the death of Mr Howard.*

But the ſphere in which he had hitherto moved was too narrow for his enlarged mind. Being named in 1773 to the office of ſheriff of Bedfordſhire, from that time his ſcene of uſefulneſs was extended. His office, as he himſelf obſerves, brought the diſtreſs of priſoners more immediately under his notice. A ſenſe of duty induced him perſonally to viſit the county-jail, where he obſerved ſuch abuſes, and ſuch ſcenes of calamity, as he had before no conception of; and he ſoon exerted himſelf in order to a reform. With a view to obtain precedents for certain regulations which he purpoſed, he went to inſpect the priſons in ſome neighbouring counties. But finding in them equal room for complaint and commiſeration, he determined to viſit the principal priſons in England. The farther he proceeded, the more ſhocking were the ſcenes preſented to his view: which induced him to reſolve upon exerting himſelf to the utmoſt, in order to a general reform in theſe horrid places of confinement; conſidering it as of the higheſt importance not only to the wretched objects themſelves, but to the community at large. Upon this ſubject he was examined in the houſe of commons in March 1774, when he had the honour of their thanks. This encouraged him to proceed in his deſign. He reviſited all the priſons in the kingdom, together with the principal houſes of correction. He alſo in 1775 enlarged his circuit by going into Wales, Scotland, and Ireland, where he found the ſame need of reformation.

One grand object which he had in view was, to put a ſtop to that ſhocking diſtemper called the *jail-fever*; which raged ſo dreadfully in many of the priſons, as to render them to the laſt degree offenſive and dangerous. A diſtemper, by which more had been taken off than by the hands of the executioner; and which, in ſeveral inſtances, had been communicated from the priſoners into the courts of juſtice, and had proved fatal to the magiſtrates and judges, and to multitudes of perſons who attended the trials, as well as to the families of diſcharged felons and debtors. Another end he propoſed was, to procure the immediate releaſe of priſoners, who, upon trial were acquitted, but who often continued long to be unjuſtly detained for want of being able to pay the accuſtomed fees: As alſo to aboliſh many other abſurd and cruel uſages which had long prevailed. But the great object of all was, to introduce a thorough reform of morals into the priſons; where he had found the moſt flagrant vices to prevail in ſuch a degree that they were become ſeminaries of wickedneſs and villany, and the moſt formidable nuiſances to the community; in conſequence of the promiſcuous intercourſe of priſoners of both ſexes, and of all ages and deſcriptions; whereby the young and leſs experienced were initiated, by old and hardened ſinners, into all the arts of villany and the myſteries of iniquity; ſo that, inſtead of being reformed by their confinement (which ſhould be the chief end of puniſhment), thoſe that were diſcharged became more injurious to ſociety than before.

In order to the attainment of theſe great objects, Mr Howard ſpared no pains nor expence, and cheerfully expoſed himſelf to much inconvenience and hazard; particularly from that malignant diſtemper, of which he ſaw many dying in the moſt loathſome dungeons into which none, who were not obliged, beſides himſelf, would venture. "I have been frequently (ſays Mr Howard) aſked what precautions I uſed to preſerve myſelf from infection in the priſons and hoſpitals which I viſit. I here anſwer, next to the free goodneſs and mercy of the Author of my being, temperance and cleanlineſs are my preſervatives. Truſting in divine Providence, and believing myſelf in the way of my duty, I viſit the moſt noxious cells; and while thus employed, I fear no evil. I never enter an hoſpital or priſon before breakfaſt; and in an offenſive room, I ſeldom draw my breath deeply."

His laudable endeavours he had the pleaſure to ſee, in ſome inſtances, crowned with ſucceſs; particularly in regard to the healthineſs of priſons, ſome of which were rebuilt under his inſpection. Through his interpoſition alſo, better proviſion has been made for the inſtruction of priſoners, by the introduction of bibles and other pious books into their cells, and a more conſtant attendance of clergymen. The gaolers likewiſe have, by act of parliament, been rendered incapable of ſelling ſtrong liquors, which had been the ſource of much drunkenneſs and diſorder. But a minute detail of particulars is not to be expected here; for theſe the reader is referred to Mr Howard's publications, which ſhow that much is yet wanting.

But in order to a more general and happy regulation, and the reformation of criminals, he determined to viſit other countries, to ſee the plans there adopted; in hope of collecting ſome information which might be uſeful in his own country. For this purpoſe he travelled into France, Flanders, Holland, Germany, and Switzerland. Afterwards through the Pruſſian and Auſtrian dominions. He viſited alſo the capitals of Denmark, Sweden, Ruſſia, and Poland, and ſome cities in Portugal and Spain. In all theſe expenſive and hazardous journeys, he denied himſelf the uſual gratifications of travellers, and declined the honours which were offered him by perſons of the firſt diſtinction, applying himſelf ſolely to his own grand object. To him the inſpection of a jail, or hoſpital, was more grateful than all the entertainments of a palace. With what aſtoniſhment and gratitude he was received by their miſerable inhabitants may eaſily be imagined, ſince while he made obſervations on their ſituation, he meditated their relief; and many diſtreſſed priſoners abroad as well as at home, partook of his bounty, and ſome were liberated by it; for he conſidered all of every nation, and people, and tongue as brethren. Nor was he ſparing of advice, or of reproof, as he ſaw occaſion to perſons of rank and influence, whereby the miſeries of their countrymen might be relieved. As he courted the favour of none, neither did he fear the frowns of any; but, with a manly freedom and a Chriſtian fortitude, ſpoke his mind to crowned heads (particularly the late emperor of Germany) in a manner to which they were not accuſtomed; which, however, in a perſon of ſuch diſintereſted views, procured him reverence and eſteem, and in ſome inſtances proved effectual for relieving the miſerable and oppreſſed. On his return, he publiſhed in 1777, "The State of the Priſons in England and Wales, with Preliminary Obſervations and an Account of ſome foreign Priſons." 4to. And in 1778 he took a third journey through the Pruſſian and Auſtrian dominions, and the free cities of Germany, and likewiſe extended his tour through Italy, and reviſited ſome of the countries he had before ſeen. The obſervations he made in this tour were publiſhed in an appendix, 1780; containing alſo ſome remarks reſpecting the management of priſoners of war, and the hulks on the Thames. But wiſhing to acquire ſome further knowledge on the ſubject, he in 1781 again reviſited Holland and ſome cities in Germany. He viſited alſo the capitals of Denmark, Sweden, Ruſſia, and Poland; and in 1783 ſome cities in Portugal and Spain, and returned through France, Flanders, and Holland. The ſubſtance of all theſe travels was afterwards thrown into one narrative, which was publiſhed in 1784. He alſo publiſhed a curious account of the Baſtile, in 8vo; that infamous French priſon happily now no more.

His travels and exertions, however, were not yet at an end. He conceived a further deſign, which was to viſit the principal lazarettos in France and Italy, in order to obtain information concerning the beſt methods to prevent the ſpreading of the plague, with a view to apply them with reſpect to other infectious diſorders. Not gaining all the ſatisfaction here which he wiſhed for, he proceeded to Smyrna and Conſtantinople, where that moſt dreadful of human diſtempers actually prevailed, "pleaſing himſelf (as he ſaid) with the idea of not only learning, but of being able to communicate ſomewhat to the inhabitants of thoſe diſtant regions." In the execution of this deſign, though he was ſo much expoſed to danger, and actually caught the plague, "that merciful Providence (as he himſelf piouſly remarks) which had hitherto preſerved him, was pleaſed to extend his protection to him in this journey alſo, and to bring him home once more in ſafety." In his return he reviſited the chief priſons and hoſpitals in the countries through which he paſſed; and afterwards went again to Scotland, and then to Ireland, where he propoſed a new and very important object; namely, to inſpect the Proteſtant Charter Schools, in ſome of which he had before obſerved ſhameful abuſes, which he had reported to a committee of the Iriſh Houſe of Commons. In this more extenſive tour, he took a particular account of what he obſerved amiſs in the conduct of this noble charity, with a view to a reformation, and not without conſiderable ſucceſs. In the courſe of theſe journeys, particular cities and communities were not unmindful to pay him proper reſpect. At Dublin, he was created by the univerſity a Doctor of Laws; and the city of Glaſgow and the town of Liverpool did honour to themſelves by enrolling him among their members. Upon his return home, having again inſpected the priſons in England, and the hulks on the Thames, to ſee what alterations had been made for the better (which he found to be very conſiderable, though yet imperfect), he publiſhed the reſult of his laſt laborious inveſtigations, in "An Account of the principal Lazarettos in Europe, with various Papers relative to the Plague, together with further Obſervations on ſome Foreign Priſons and Hoſpitals, and additional Remarks on the preſent State of thoſe in Great-Britain and Ireland," with a great number of curious plates. The work likewiſe contained Obſervations on Penitentiary Houſes, which had been encouraged by act of parliament, for the correction and reformation of criminals, of which he and Dr Fothergill had been nominated by the king to be ſuperintendants. Beſide theſe, he publiſhed the Grand Duke of Tuſcany's "new Code of Criminal Law with an Engliſh Tranſlation:" and of all his publications he gave away a vaſt number of copies among his acquaintance in the moſt liberal manner. His laying open the horrors of deſpotiſm in a neighbouring country had very nearly expoſed him to the ſufferings of them; and had it not been for the timely notice of our ambaſſador, he had ended his days in the Baſtile.

Not ſatisfied, however, with what he had already done, he concludes his "Account of Lazarettos" with announcing his "intention again to quit his country, for the purpoſe of reviſiting Ruſſia, Turkey, and ſome other countries, and extending his tour in the Eaſt. I am not inſenſible (ſays he) of the dangers that muſt attend ſuch a journey. Truſting, however, in the protection of that kind Providence which has hitherto preſerved me, I calmly and cheerfully commit myſelf to the diſpoſal of unerring wiſdom. Should it pleaſe God to cut off my life in the proſecution of this deſign, let not my conduct be uncandidly imputed to raſhneſs or enthuſiaſm, but to a ſerious deliberate conviction that I am purſuing the path of duty, and to a ſincere deſire of being made an inſtrument of more extenſive uſefulneſs to my fellow-creatures than could be expected in the narrower circle of a retired life." Accordingly, to the great concern of his friends, he ſet out in ſummer 1789 on this hazardous enterprize; the principal object of which was to adminiſter a medicine in high repute at home, in malignant fevers,* under a ſtrong perſuaſion that it would be equally efficacious in the plague. In this ſecond tour in the Eaſt "it *did* pleaſe God to cut off his life:" for, having ſpent ſome time at Cherſon, a new ſettlement of the Empreſs of Ruſſia, in the mouth of the Dnieper or Boryſthenes, toward the northern extremity of the Black Sea, near Oczakow, he caught, in viſiting the Ruſſian hoſpital of that place, or as ſome ſay a young lady who was ill of the ſame complaint, a malignant fever, which carried him off on the 20th of January, after an illneſs of about twelve days: and after having been kept, according to his expreſs directions to his ſervant, five days, he was buried by his own deſire, in the garden of a villa in the neighbourhood, belonging to a French gentleman from whom he had received great civilities, by his faithful ſervant who had attended him on his former journeyings, and whom he expreſsly enjoined not to return home till five weeks from his death. While abſent on his firſt tour to Turkey, *&c.* his character for active benevolence had ſo much attracted the public attention, that a ſubſcription was ſet on foot to erect a ſtatue to his honour, and in no long ſpace above L.1500 was ſubſcribed for that purpoſe.

*Dr James's Powder.

purpoſe. But ſome of thoſe who knew Mr Howard beſt, never concurred in the ſcheme, being well aſſured that he would neither countenance nor accede to it; and in conſequence of two letters from Mr Howard himſelf † to the ſubſcribers, the deſign was laid aſide. It has, however, been reſumed ſince his death: And ſurely, of all the ſtatues or monuments ever erected by public gratitude to illuſtrious characters either in ancient or modern times, none was ever erected in honour of worth ſo genuine and admirable as his—who devoted his time, his ſtrength, his fortune, and finally ſacrificed his life, in the purſuits of humanity:—who (to adopt the expreſſive words of Mr Burke ‡) "viſited all Europe [and the Eaſt], not to ſurvey the ſumptuouſneſs of palaces, or the ſtatelineſs of temples; not to make accurate meaſurements of the remains of ancient grandeur, nor to form a ſcale of the curioſity of modern art: not to collect medals, or to collate manuſcripts; but to dive into the depth of dungeons; to plunge into the infection of hoſpitals; to ſurvey the manſions of ſorrow and of pain; to take the guage and dimenſions of miſery, depreſſion, and contempt; to remember the forgotten; to attend to the neglected; to viſit the forſaken; and to compare and collate the diſtreſſes of all men in all countries. His plan is original; and it is as full of genius as it is of humanity. It is a voyage of diſcovery, a circumnavigation of charity; and already the benefit of his labour is felt more or leſs in every country."

HOWDEN, a town in the Eaſt Riding of Yorkſhire, 180 miles from London, ſtands on the north ſide of the Ouſe, has a market on Saturdays, and four fairs in the year. Here was formerly a collegiate church of five prebendaries, erected in the laſt century but one; adjacent to which the biſhops of Durham, who poſſeſs many eſtates hereabouts with a temporal juriſdiction, have a palace. One of them built a very tall ſteeple to the church here, whither the inhabitants might retire in caſe of inundations; to which it is very liable from the great freſhes that come down the Ouſe ſometimes at ebb. This part of the country is from hence called Howdenſhire, and is watered by a conflux of ſeveral large rivers that fall into the Humber. At Howdendike is a ferry over the Ouſe.

HOWE (John), a learned Engliſh nonconformiſt divine born in 1630. He became miniſter of Great Torrington in Devonſhire, and was appointed houſehold chaplain to Cromwell; but ſeems to have been free from the fanaticiſm then in faſhion, as he offended Cromwell greatly by preaching againſt the notion of particular faith, which the miniſters of his court were great advocates for. When Oliver died, he continued chaplain to Richard; and when Richard was depoſed, he returned to Torrington, where he continued till the act of uniformity took place and ſet him aſide. He afterwards ſettled at Utrecht, until the declaration for liberty of conſcience was publiſhed by king James II. under ſhelter of which he returned to London, where he died in 1705. He publiſhed a great number of ſermons and religious works, which have been reprinted together in two vols folio.

Howe-Iſland, a ſmall iſland of the South Sea, diſcovered by captain Wallis, called by the inhabitants of the Society-iſland *Mopeha*; lies in S. Lat. 16. 46. and W. Long. 154. 8.

Lord Howe's Iſland, a ſmall iſland in the neighbourhood of New South Wales, diſcovered on February 17. 1788, S. Lat. 31. 36. E. Long. 159. 04. It is of an arched figure, lying from north-weſt to ſouth-eaſt, the two extremities including a ſpace of about ſix miles, though, by reaſon of the curved figure of the iſland itſelf, it is near ſeven in length. It is deeply indented on the middle of the eaſtern part by a bay named Roſs's Bay, and on the oppoſite and weſtern part has another named Prince William Henry's Bay; ſo that the whole has the appearance of two iſlands joined together by an iſthmus, which in ſome places is not above half a mile broad. On the ſouthern part of that diviſion which lies moſt to the northward are two conſiderable bays, named Callam's and Hunter's Bay; and on the ſouth-weſtern part of the other are two high mountains, the moſt ſoutherly named Mount Gower, and the other Mount Lidgbird. The convex part of the iſland lying towards the north-eaſt, and the concave ſide towards the oppoſite quarter, is terminated by two points named Point King and Point Philip. No freſh water was found on the iſland; but it abounds with cabbage palms, mangrove, and manchineel trees, even up to the ſummits of the mountains. There are plenty of ganets, and a land fowl of a duſky brown colour, with a bill about four inches long, and feet like thoſe of a chicken. Theſe were found to be remarkably fine meat, and were very fat. There are many large pigeons, and the white birds found in Norfolk Iſland were alſo met with in this place. The bill of this bird is red, and very ſtrong, thick, and ſharp pointed. Great numbers of fine turtle frequent this iſland in ſummer, but go to the northward in winter. Theſe, it was imagined, would prove of great ſervice to the colony at Port Jackſon; but, from ſome cauſe or other, it appears they have hitherto been diſappointed. Plenty of fiſh were caught by a hook and line. At the diſtance of about four leagues from Lord Howe's Iſland is a very remarkable and high rock, to which the name of Ball's Pyramid has been given. This iſland may be approached without danger; but about four miles from the ſouth-weſt part of the pyramid there is a very dangerous rock, which ſhows itſelf above the ſurface of the water, and appears not to be larger than a boat. The ſouthern part of the iſland is lined with a ſandy beach, which is guarded againſt the ſea by a reef of coral rock, at the diſtance of half a mile from the beach, through which there are ſeveral ſmall openings for boats; but there is nowhere a greater depth of water within the reef than four feet. By the account of Mr Watts, who viſited this iſland in his return from Port Jackſon, the iſthmus which joins the two parts has evidently been overflowed, and the iſland disjoined, as in the very centre the men ſaw large beds of coral rocks and great quantities of ſhells; and on the eaſt, which ſeems in general to be the weather-ſide, the ſea has thrown up a bank of ſand from 25 to 30 feet high, which ſerves as a barrier againſt future inundations. The iſland alſo appears to have ſuffered by volcanic eruptions, as great quantities of pumice-ſtones and other matters of that kind were found upon it. Mr Auſtin alſo found the whole reef which ſhelters the weſt bay a burnt-up maſs. The time he viſited the iſland was that of the incubation of the ganets, of which there were then prodigious numbers, their neſts being only hollows made in the ſand, there not being any quadrupeds on the iſland to diſturb them. Beſides the large pigeons already mentioned, they met with beautiful parrots and parroquets; a new ſpecies of the coote, as well as of the rail and magpie. They found likewiſe a very beautiful ſmall bird of a brown colour with a yellow breaſt, and yellow on the wing, which ſeemed to be a ſpecies of humming bird. They found alſo a black bird like a ſheerwater, having a hooked bill; and which burrows in the ground. The only inſects met with here were the common earth worm and ants; which laſt were in great plenty. Beſides the trees already mentioned, they found ſeveral eſculent vegetables, as ſcurvy graſs, celery, ſpinach, endive, and ſamphire.

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† See *Gent. Mag.* vol. lvii. p. 101.

‡ *Speech at Guildhall in Briſtol*, 1780.

HOWEL (James), a voluminous writer of the 17th century, ſupported himſelf many years by writing and tranſlating of books. Though he had been a zealous loyaliſt, he afterwards flattered Cromwell; yet on the reſtoration he was made hiſtoriographer to the king, being the firſt in England who enjoyed that title. He died in 1666.

HOWITZ, a kind of mortar, mounted upon a field-carriage like a gun. The difference between a mortar and a howitz is, that the trunnions of the firſt are at the end, and at the middle in the laſt. The invention of howitzes is of much later date than mortars, for they really had their origin from them. The conſtructions of howitzes are as various and uncertain as thoſe of mortars, excepting the chambers, which are all cylindric. They are diſtinguiſhed by the diameter of the bore; for inſtance, a ten inch howitz is that the diameter of which is 10 inches; and ſo of the ſmaller ones.

HOWTH, a promontory which forms the northern entrance of the bay of Dublin, having a ſmall village about ſeven miles north eaſt from that city in the province of Leinſter. It gives title of earl to the family of St Lawrence, who were ſo called from a victory obtained by them over the Iriſh on St Lawrence's day 1177, their former name being Triſtram; and this place has continued in poſſeſſion of the family above 600 years. N. Lat. 53. 21. W. Long. 6. 22. The ſhores off this hill are rocky and precipitous, affording, however, a few harbours for ſmall craft. It was formerly called Ben-hedar, i. e. "the Birds promontory;" and celebrated for having Dun Criomthan, or the rath or royal palace of Criomthan erected on it, he having been chief or king of that diſtrict, and memorable for making ſeveral ſucceſsful deſcents on the coaſt of Britain againſt the Romans in the time of Agricola. Howth, though now ſtript of trees, was formerly covered with venerable oaks, and was a ſeat of the Druids; one of their altars ſtill remains in a ſequeſtered valley on the eaſt ſide of the hill. The manſion-houſe is built in form of a caſtle, and was probably erected by Sir Armoricus Triſtram. Near the houſe ſtands the family chapel, and on the weſtern ſhore are the ruins of St Mary's church, with ſome ancient monuments of Lord Howth's anceſtors. Due weſt of Howth houſe are the ruins of St Fenton's church.

HOY, a ſmall veſſel, chiefly uſed in coaſting, or carrying goods to or from a ſhip, in a road or bay, where the ordinary lighters cannot be managed with ſafety or convenience

It would be very difficult to deſcribe, preciſely, the marks of diſtinction between this veſſel and ſome others of the ſame ſize, which are alſo rigged in the ſame manner; becauſe what is called a *hoy* in one place, would aſſume the name of a *ſloop* or *ſmack* in another; and even the people who navigate theſe veſſels, have, upon examination, very vague ideas of the marks by which they are diſtinguiſhed from thoſe above mentioned. In Holland, the hoy has two maſts; in England, it has but one, where the main-ſail is ſometimes extended by a boom, and ſometimes without it. Upon the whole, it may be defined a ſmall veſſel, uſually rigged as a ſloop, and employed for carrying paſſengers and luggage from one place to another, particularly on the ſea-coaſt.

HOY, an iſland of Scotland, and one of the Orcades. It is about 10 miles long; and that part called *Waes* is fruitful and pretty populous, and is a good place for fiſhing.

HOYE, a town of Germany, in Weſtphalia, and capital of a county of the ſame name. It is ſeated on the river Weſer, and is ſubject to the elector of Hanover. E. Long. 9. 0. N. Lat. 53. 5.

HUAHINE, one of the *Society-Iſlands*, in the South-Sea, ſituated in S. Lat. 16. 43. W. Long. 150. 52. and is about ſeven or eight leagues in compaſs. Its ſurface is hilly and uneven, and it has a ſafe and convenient harbour. It was firſt diſcovered by captain Cook in 1769. It is divided by a deep inlet into two peninſulas connected by an iſthmus, which is entirely overflowed at high water. From the appearance of its hills it may be concluded, that the country has at ſome period or other been the ſeat of a volcano. The ſummit of one of them had much the appearance of a crater, and a blackiſh ſpongy earth was ſeen upon one of its ſides, which ſeemed to be lava; and the rocks and clay every where had a burnt appearance. The iſland is plentifully ſupplied with water by many rivulets which deſcend from the mountains and broken rocks. The inhabitants are nearly as fair as Europeans; and their conduct is bolder than that of the inhabitants of the other Society Iſlands. They are a ſtout large made people, ſome of the talleſt being ſix feet three inches in height; they are extremely indolent, and ſeem to have as little curioſity as fear. The dogs are in great favour with all their women, "who could not have careſſed them (ſays Mr Forſter) with a more ridiculous affection if they had been European ladies of faſhion." Here was ſeen a middle-aged woman, whoſe breaſts were full of milk, offering them to a little puppy who had been trained up to ſuck them. The ſight diſguſted thoſe who ſaw it ſo much, that they could not forbear expreſſing their diſlike to it; but the woman ſmiled, and told them ſhe allowed young pigs to do the ſame. It appeared afterwards that this woman had loſt her child. Some of the gentlemen were preſent at a dramatic entertainment on this iſland: the piece repreſented a girl running away from her parents; and ſeemed to be levelled at a female paſſenger who had come in captain Cook's ſhip from Otaheite, and who happened to be preſent at the repreſentation. It made ſuch an impreſſion on the girl, that the gentlemen could ſcarce prevail upon her to ſee the piece out, or to refrain from tears while it was acting. It concluded with the reception ſhe was ſuppoſed to meet with from her friends, which was made out not to be a very agreeable one.—Theſe people introduce extempore pieces upon occaſion; and it is moſt probable that this was meant as a ſatire upon the girl above mentioned, and to diſcourage others from acting in the ſame manner.

HUBER (Ulric), one of the greateſt civilians in the 17th century was born at Dockum in 1636. He became profeſſor of law at Francker: and wrote, 1. A treatiſe *De jure civitatis*. 2. *Juriſprudentia Friſica*. 3. *Specimen philoſophiæ civilis*. 4. *Inſtitutiones hiſtoriæ civilis*; and ſeveral other works which are eſteemed. He died in 1694.

HUBERT (St), a town of the Netherlands, on the confines of Liege, with a very fine abbey, where they bring thoſe that are bit by mad animals to be cured. E. Long. 5. 25. N. Lat. 34. 32.

HUBNER (John), a learned geographer of Germany, taught geography at Leipſic and Hamburg with extraordinary reputation; and died at Hamburg in 1732, aged 63. His principal work is A Geographical treatiſe, printed at Baſil in 1746, in 6 vols 12mo.

HUDSON (Jeffrey). See DWARF.

HUDSON (Henry) an eminent Engliſh navigator, who, about the beginning of the laſt century, undertook to find out a paſſage by the north-eaſt or north-weſt to Japan and China. For this purpoſe he was four times fitted out: he returned three times unſucceſsful; but in the laſt voyage, in 1610, being perſuaded that the great bay to which his name has been ſince given, muſt lead to the paſſage he ſought, he wintered there, to proſecute his diſcovery in the ſpring. But their diſtreſs during the winter producing a mutiny among his men, when the ſpring arrived, they turned him, with his ſon and ſeven ſick men, adrift in his own ſhallop, and proceeded home with the ſhip. As Hudſon and his unhappy companions were never heard of afterward, it is to be ſuppoſed they all periſhed.

HUDSON (John), a very learned Engliſh critic, born in 1662. He diſtinguiſhed himſelf by ſeveral valuable editions of Greek and Latin authors; and, in 1701, was elected head keeper of the Bodleian library at Oxford. In 1712, he was appointed principal of St Mary's Hall, through the intereſt of the famous Dr Ratcliffe; and it is ſaid that the univerſity of Oxford is indebted for the moſt ample benefactions of that phyſician to Dr Hudſon's ſolicitations. He died in 1719, while he was preparing for publication a catalogue of the Bodleian library, which he had cauſed to be fairly tranſcribed in ſix folio volumes.

HUDSON's-Bay, a large bay of North-America, lying between 51 and 69 degrees of latitude, diſcovered in 1610 by Henry Hudſon. This intrepid mariner, in ſearching after a north-weſt paſſage to the South-ſeas, diſcovered three ſtraits, through which he hoped to find out a new way to Aſia by America. He had made two voyages before on the ſame adventure; the firſt in 1607, and the ſecond in 1608. In his third and laſt, 1610, he entered the ſtreights that lead into this new Mediterranean, the bay known by his name; coaſted a great part of it; and penetrated to eighty degrees and an half into the heart of the frozen zone. His ardour for the diſcovery not being abated by the difficulties he ſtruggled with in this empire of winter, and world of froſt and ſnow, he ſtaid here until the enſuing ſpring, and prepared in the beginning of 1611 to purſue his diſcoveries; but his crew, who ſuffered equal hardſhips, without the ſame ſpirit to ſupport them, mutinied, ſeized upon him and ſeven of thoſe who were moſt faithful to him, and committed them to the fury of the icy ſeas in an open boat. Hudſon and his companions were either ſwallowed up by the waves, or gaining the inhoſpitable coaſt were deſtroyed by the ſavages; but the ſhip and the reſt of the men returned home. Other attempts towards a diſcovery were made in 1612 and 1667; and a patent for planting the country, with a charter for a company, was obtained in the year 1670. In 1746 Captain Ellis wintered as far north as 57 degrees and a half, and Captain Chriſtopher attempted farther diſcoveries in 1761. But beſides theſe and the late voyages, which ſatisfy us that we muſt not look for a paſſage on this ſide of the latitude 67 degrees north, we are indebted to the Hudſon's Bay Company for a journey by land; which throws much additional light on this matter, by affording what may be called demonſtration, how much farther north, at leaſt in ſome parts of their voyage, ſhips muſt go, before they can paſs from one ſide of America to the other. The northern Indians, who came down to the company's factories to trade, had brought to the knowledge of our people a river, which on account of much copper being found near it, had obtained the name of the Copper-mine river. The company being deſirous of examining into this matter with preciſion, directed Mr Hearne, a young gentleman in their ſervice, and who having been brought up for the navy and ſerved in it the war before laſt, was extremely well qualified for the purpoſe, to proceed over land under the convoy of thoſe Indians, for that river, which he had orders to ſurvey if poſſible quite down to its exit into the ſea; to make obſervations for fixing the latitudes and longitudes; and to bring home maps and drawings both of it and the countries through which he ſhould paſs. Accordingly Mr Hearne ſet out from the Prince of Wales's Fort, on Churchill river, latitude 58° 47½′ North, and longitude 94° 7½′ Weſt from Greenwich, on the 7th of December 1770. On the 13th of June he reached the Copper-mine river, and found it all the way, even to its exit into the ſea, encumbered with ſhoals and falls, and emptying itſelf into it over a dry flat of the ſhore, the tide being then out, which ſeemed by the edges of the ice to riſe about 12 or 14 feet. This riſe, on account of the falls, will carry it but a very ſmall way within the river's mouth, ſo that the water in it had not the leaſt brackiſh taſte. Mr Hearne was nevertheleſs ſure of the place it emptied itſelf into being the ſea, or a branch of it, by the quantity of whalebone and ſeal ſkins which the Eſquimaux had at their tents; and alſo by the number of ſeals which he ſaw upon the ice. The ſea at the river's mouth was full of iſlands and ſhoals as far as he could ſee by the aſſiſtance of a pocket teleſcope; and the ice was not yet (July 17th) broken up, but thawed away only for about three quarters of a mile from the ſhore, and for a little way round the iſlands and ſhoals which lay off the river's mouth. But he had the moſt extenſive view of the ſea when he was about eight miles up the river; from which ſtation the extreme parts of it bore N. W.

by W. and N. E. By the time Mr Hearne had finiſhed his ſurvey of the river, which was about one o'clock in the morning on the 18th, there came on a very thick fog and drizzling rain; and as he had found the river and ſea in every reſpect unlikely to be of any utility, he thought it unneceſſary to wait for fair weather to determine the latitude more exactly by obſervation; but by the extraordinary care he took in obſerving the courſes and diſtances, walking from Congecathawhachaga, where he had two very good obſervations, he thinks the latitude may be depended on within 20′ at the utmoſt. It appears from the map which Mr Hearne conſtructed of this ſingular journey, that the mouth of the Copper-mine river lies in latitude 72° N. and longitude 25° W. from Churchill river; that is about 119° W. of Greenwich. Mr Hearne's journey back from the Copper-mine-river to Churchill laſted till June 30th 1772; ſo that he was abſent almoſt a year and ſeven months. The unparalleled hardſhips he ſuffered, and the eſſential ſervice he performed, met with a ſuitable reward from his maſters, and he was made governor of Prince of Wales's Fort on Churchill river. But though the adventurers failed in the original purpoſe for which they navigated this bay, their project, even in its failure, has been of great advantage to their country, as is ſhown under the article COMPANY *(Hudſon's Bay.)*

The country lying round Hudſon's Bay is called *New Britain*, or the country of the Eſquimaux; comprehending *Labrador*, now North and South Wales. The entrance of the bay from the ocean, after leaving to the North Cape Farewell and Davis's Straits, is between Reſolution iſles on the north, and Button's iſles on the Labrador coaſt to the ſouth, forming the eaſtern extremity of the ſtraits diſtinguiſhed by the name of its great diſcoverer. The coaſts are very high, rocky, and rugged at top; in ſome places precipitous, but ſometimes exhibit large beaches. The iſles of Saliſbury, Nottingham, and Cigges, are alſo very lofty and naked. The depth of water in the middle of the bay is a hundred and forty fathoms. From Cape Churchill to the ſouth end of the bay are regular ſoundings; near the ſhore ſhallow, with muddy or ſandy bottom. To the north of Churchill the ſoundings are irregular, the bottom rocky, and in ſome parts the rocks appear above the ſurface at low water. From Mooſe river or the bottom of the bay to Cape Churchill the land is flat, marſhy, and wooded with pines, birch, larch, and willows. From Cape Churchill to Wager's Water the coaſts are all high and rocky to the very ſea, and woodleſs, except the mouths of Pockerekeſko and Seal rivers. The hills on their back are naked nor are there any trees for a great diſtance inland.

The mouths of all the rivers are filled with ſhoals; except that of Churchill, in which the largeſt ſhips may lie: but ten miles higher, the channel is obſtructed with ſand-banks; and all their rivers, as far as has been navigated, are full of rapids and cataracts from ten to ſixty feet perpendicular. Down theſe rivers the Indian traders find a quick paſſage; but their return is a labour of many months. As far inland as the company have ſettlements, which is ſix hundred miles to the weſt, at a place called Hudſon Houſe, lat. 53. long. 106. 27. from London, is a flat country: nor is it known how far to the eaſtward the great chain ſeen by our navigators from the Pacific Ocean branches off.

The climate even about Haye's river, in only lat. 57, is during winter exceſſively cold. The ſnows begin to fall in October, and continue falling by intervals the whole winter; and when the froſt is moſt rigorous, in form of the fineſt ſand. The ice on the rivers is eight feet thick. Port-wine freezes into a ſolid maſs; brandy coagulates. The very breath fell on the blankets of the beds in the form of a hoar froſt, and the bed-cloaths often were found frozen to the wall. The ſun riſes in the ſhorteſt day at five minutes paſt nine and ſets five minutes before three. In the longeſt day the ſun riſes at three, and ſets about nine. The ice begins to diſappear in May, and hot weather commences about the middle of June, which at times is ſo violent as to ſcorch the face of the hunters. Thunder is not frequent but very violent. But there muſt be great difference of heat and cold in this vaſt extent, which reaches from lat. 50. 40, to lat. 63 north.—During winter the firmament is not without is beauties. Mock ſuns and halos are not unfrequent; they are very bright and richly tinged with all the colours of the rainbow. The ſun riſes and ſets with a large cone of yellowiſh light. The night is enlivened with the Aurora Borealis which ſpreads a thouſand different lights and colours over the whole concave of the ſky, not to be defaced even by the ſplendour of the full moon; and the ſtars are of a fiery redneſs.

The eaſtern boundary of the bay is Terra di Labrador; the northern part has a ſtraight coaſt facing the bay, guarded with a line of iſles innumerable. A vaſt bay, called the Archiwinnipy Sea, lies within it, and opens into Hudſon's Bay by means of Gulph Hazard, through which the Beluga whales dart in great numbers. Here the company had a ſettlement for the ſake of the fiſhery, and for trading with the Eſquimaux; but deſerted it as unprofitable about the year 1758 or 1759. The eaſtern coaſt is barren paſt the efforts of cultivation. The ſurface is every where uneven, and covered with maſſes of ſtone of an amazing ſize. It is a country of fruitleſs valleys and frightful mountains, ſome of an aſtoniſhing height: the firſt watered by a chain of lakes, formed not from ſprings but rain and ſnow, ſo chilly as to be productive of only a few ſmall trout. The mountains have here and there a blighted ſhrub, or a little moſs. The valleys are full of crooked ſtunted trees, pines, fir, birch, and cedars, or rather a ſpecies of Juniper. In lat. 60, on this coaſt, vegetation ceaſes. The whole ſhore, like that on the weſt, is faced with iſlands at ſome diſtance from land. The inhabitants among the mountains are Indians; along the coaſts Eſquimaux. The dogs of the former are very ſmall; of the latter large, and headed like a fox. Notwithſtanding they have rein deer, they never train them for the ſledge; but apply the dogs to that uſe. Walruſes viſit a place called Nuchvûnk, in lat. 60, during winter; from thence the natives purchaſe the teeth with which they head their darts. Davis ſuſpected that he had found a paſſage on this coaſt, in 1586, to the Weſtern Ocean; but it proves no more than a deep bay.

The laudable zeal of the Moravian clergy induced them to ſend, in the year 1752, miſſionaries from

Greenland to this country. They fixed on Niſbet's harbour for their ſettlement; but the firſt party was partly killed, partly driven away. In 1764, under the protection of the government, another attempt was made. The miſſionaries were well received by the Eſquimaux, and the miſſion goes on with ſucceſs.

The animals of theſe countries are, the mooſe deer, ſtags, rein-deer, bears, tygers, buffaloes wolves, foxes, beavers, otters, lynxes, martins, ſquirrels, ermins, wild cats, and hares. The rein-deer paſs in vaſt herds towards the north in October, ſeeking the extreme cold. The male polar bears rove out at ſea, on the floating ice, moſt of the winter, and till June: the females lie concealed in the woods, or beneath the banks of rivers till March, when they come abroad with their twin cubs, and bend their courſe to the ſea in ſearch of their conſorts. Several are killed in their paſſage; and thoſe which are wounded ſhow vaſt fury, roar hideouſly, and bite and throw up into the air even their own progeny. The females and the young, when not interrupted continue their way to ſea. In June the males return to ſhore, and by Auguſt are joined by their conſorts, with the cubs, by that time of a conſiderable ſize. The feathered kinds are, geeſe, buſtards, ducks, partridges, and all manner of wild-fowls. Indeed multitudes of birds retire to this remote country to Labrador and Newfouudland, from places moſt remotely ſouth, perhaps from the Antilles; and ſome even of the moſt delicate little ſpecies. Moſt of them, with numbers of aquatic fowls are ſeen returning ſouthward with their young broods to more favourable climates. The ſavages in ſome reſpects regulate their months by the appearance of birds; and have their gooſe month from the vernal appearance of geeſe from the ſouth. All the grous kind, ravens, cinereous crows, titmouſe, and Lapland finch, brave the ſevereſt winter; and ſeveral of the falcons and owls ſeek ſhelter in the woods. Of fiſh, there are whales, morſes, ſeals, cod-fiſh, and a white fiſh preferable to herrings; and in their rivers and freſh waters, pike, perch, carp, and trout.

All the quadrupeds of theſe countries are clothed with a ſoft, warm, fur. In ſummer there is here, as in other places, a variety in the colours of the ſeveral a-animals; when that ſeaſon is over, which holds only for three months, they aſſume the livery of winter, and every ſort of beaſts, and moſt of their fowls, are of the colour of the ſnow; every thing animate and inanimate is white. This is a ſurpriſing phenomenon. But what is yet more ſurpriſing, and what is indeed one of the moſt ſtriking things, that draw the moſt inattentive to an admiratiion of the wiſdom and goodneſs of Providence, is, that the dogs and cats from Great Britain that have been carried into Hudſon's Bay, on the approach of winter have entirely changed their appearance, and acquired a much longer, ſofter, and thicker coat of hair than they had originally.

Hudson's-Bay Company. See Company.

Hudson's-River, a large river of North America, which riſes on the eaſt of Lake Ontario, and running by Albany, and on the back of the ſouth part of New-England through part of New-York, falls into the bay of the ſea beyond the weſt end of Long-Iſland, and below the City of New-York.

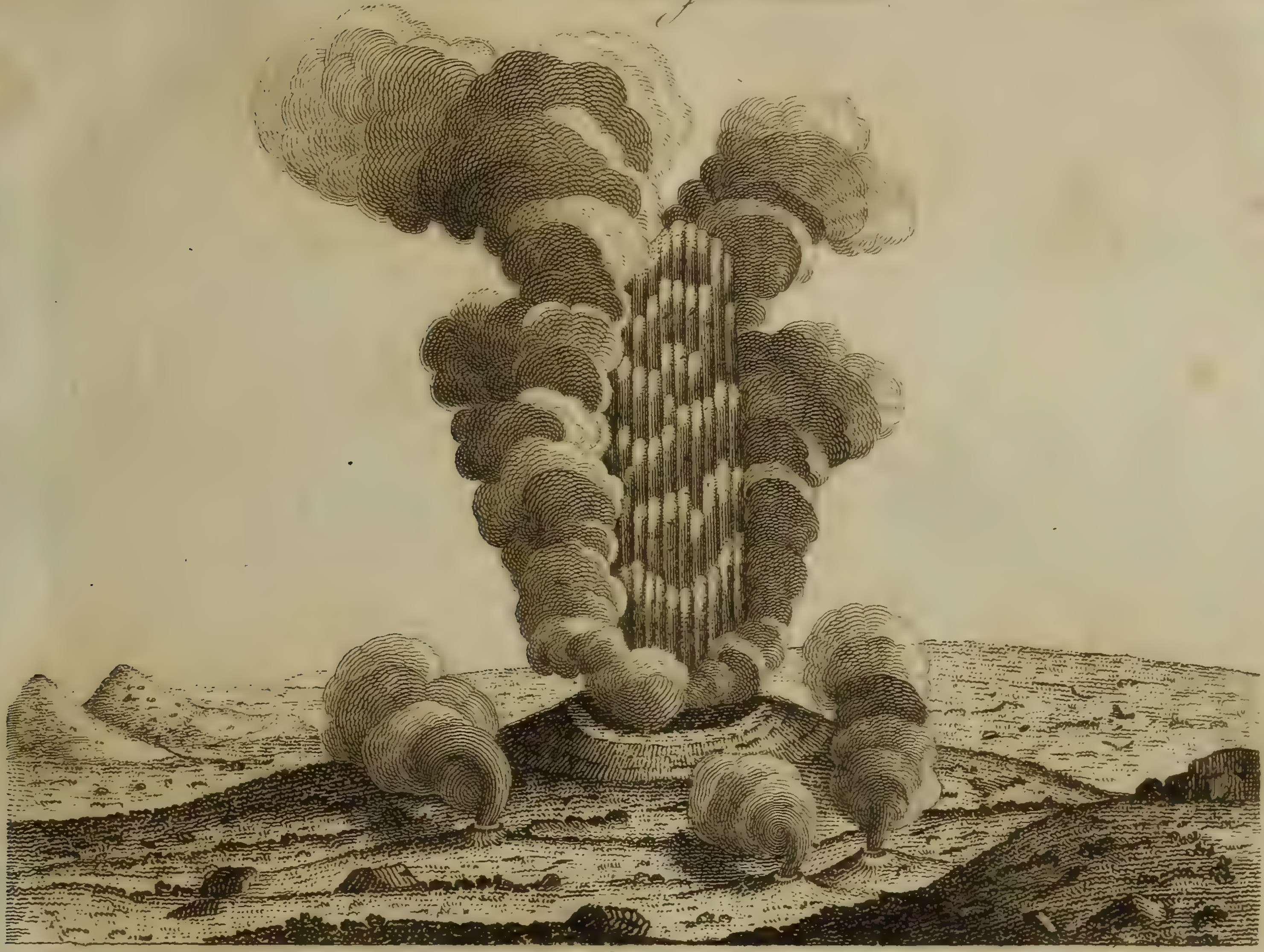
HUDSONIA, in botany; a genus of the monogynia order, belonging to the dodecandria claſs of plants. There is no corolla; the calyx is pentaphyllous and tubular: there are 15 ſtamina; the capſule is unilocular, trivalvular, and triſpermous.

HUE *and* Cry, in law, the purſuit of a perſon who has committed felony on the high-way.—Of this cuſtom, which is of Britiſh origin, the following deduction is given by Mr Whitaker. "When it was requiſite for the Britons to call out their warriors into the field, they uſed a method that was particularly marked by its expeditiouſneſs and deciſiveneſs and remains partially among us to this moment. They raiſed a cry, which was immediately caught up by others, and in an inſtant tranſmitted from mouth to mouth through all the region. And as the notice paſſed along, the warriors ſnatched their arms, and hurried away to the rendezvous. We have a remarkable deſcription of the fact in Cæſar, and there ſee the alarm propagated in 16 or 17 hours through 260 miles in a line. And the ſame practice has been retained by the Highlanders to our own time. When the lord of a clan received intelligence of an enemy's approach, he immediately killed a goat with his own ſword, dipped the end of a half-burnt ſtick in the blood, and then gave it and the notice of the rendezvous to be carried to the next hamlet. The former ſymbolically threatened fire and ſword to all his followers that did not inſtantly repair to the later. The notice was diſpatched from hamlet to hamlet with the utmoſt expedition. And in three or four hours the whole clan was in arms, and aſſembled at the place appointed. This was within theſe few years the ordinary mode by which the chieftains aſſembled their followers for war. The firſt perſon that received the notice, ſet out with it at full ſpeed, delivered it to the next that he met, who inſtantly ſet out on the ſame ſpeed, and handed it to a third. And, in the late rebellion of 1745, it was ſent by an unknown hand through the region of Breadalbane; and, flying as expeditiouſly as the Gallick ſignal in Cæſar, traverſed a tract of 32 miles in three hours. This quick method of giving a diffuſive alarm is even preſerved among ourſelves to the preſent day; but is applied, as it ſeems from Cæſar's account above to have been equally applied among the Celtæ, to the better purpoſes of civil polity. The *huteſium and clamour* of our laws, and the *hue and cry* of our own times, is a well-known and powerful proceſs for ſpreading the notice and continuing the purſuit of any fugutive felons. The cry, like the clamour of the Gauls or the ſummons of the Highlanders, is taken from town to town and from county to county; and a chain of communication is ſpeedily carried from one end of the kingdom to the other."

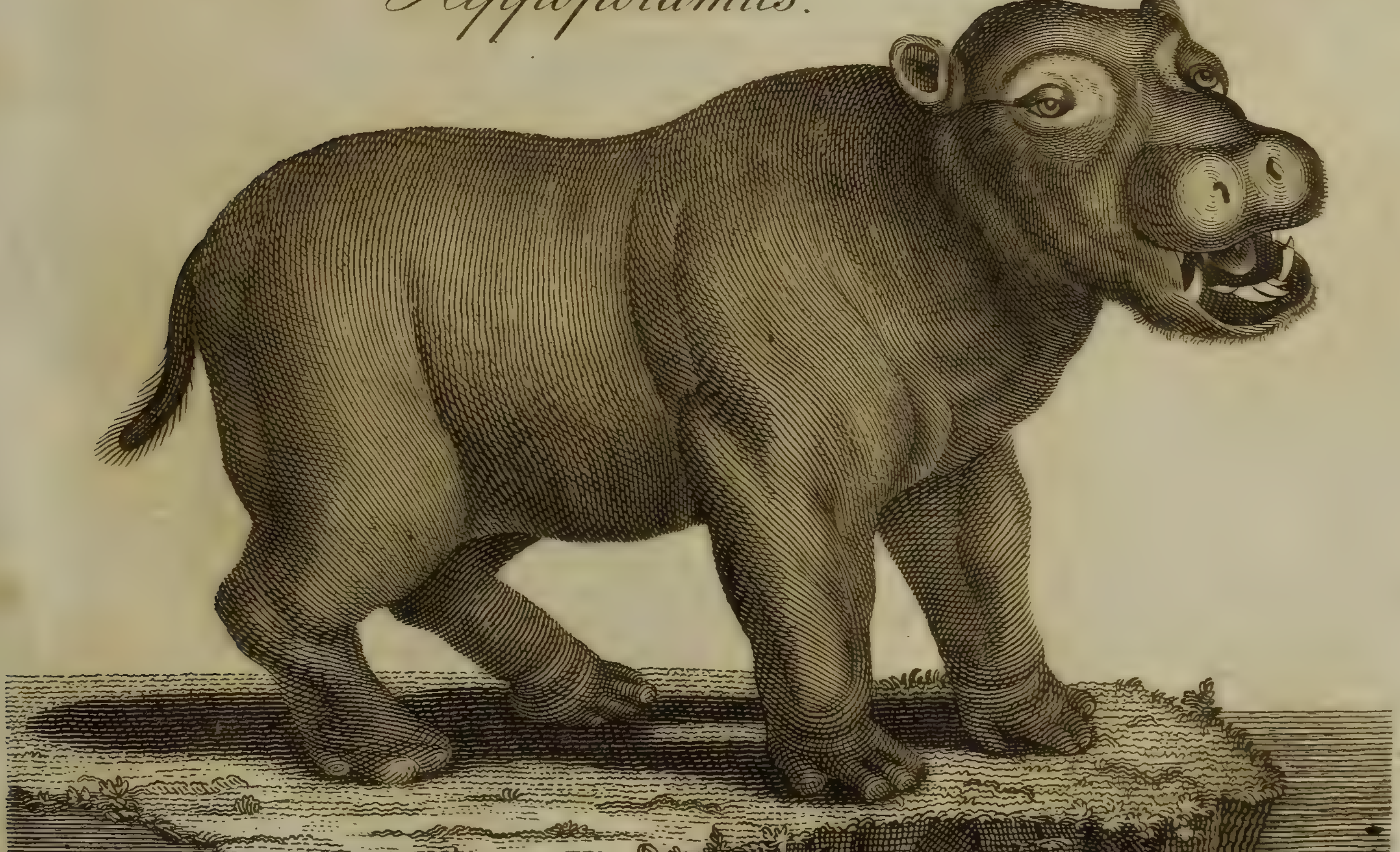
HUER, a name given to certain fountains in Iceland, of a moſt extraordinary nature; forming at times *jets d'eaux* of ſcalding water ninety-four feet high and thirty in diameter, creating the moſt magnificent gerbes that can be imagined, eſpecially when backed by the ſetting ſun. They ariſe out of cylindrical tubes of unknown depths: near the ſurface they expand into apertures of a funnel ſhape, and the mouths ſpread into large extent of ſtalactitical matter, formed of ſucceſſive ſcaly concentric undulations. The playing of theſe ſtupendous ſpouts is foretold by noiſes roaring like the cataract of Niagara. The cylinder

Plate CCXXXVI.

Huer or Boiling Fountain.



Hippopotamus.



Thackara & Vallance sc.

begins to fill: it riſes gradually to the ſurface, and gradually increaſes its height, ſmoking amazingly, and flinging up great ſtones. After attaining its greateſt height it gradually ſinks till it totally diſappears. Boiling *jets d'eaux* and boiling ſprings are frequent in moſt parts of the iſland. In many parts they are applied to the culinary uſes of the natives. The moſt capital is that which is called *Geyer* or *Geyſer*, in a plain riſing into ſmall hills, and in the midſt of an amphitheatre, bounded by the moſt magnificent and various-ſhaped icy mountains; among which the three-headed Hecla ſoars pre-eminent. See ICELAND, Nº 4.——Theſe huers are not confined to the land; they riſe in the very ſea, and form ſcalding fountains amidſt the waves. Their diſtance from the land is unknown; but the new volcanic iſle, twelve miles off the point of Reickenes, emitting fire and ſmoke, proves that the ſubterraneous fires and waters extend to that ſpace; for thoſe awful effects ariſe from the united fury of theſe two elements.

Plate cccxxvi.

HUESCA, an ancient and conſiderable town of Spain, in the kingdom of Arragon, with a biſhop's ſee and an univerſity. It is ſeated on the Iſſuela, in a ſoil producing excellent wine, in W. Long. 0. 13. N. Lat. 40. 2.

HUESCAR, or GUESCAR, a town of Spain, in the kingdom of Granada, ſeated on a plain in W. Long. 1. 45. N. Lat. 37. 32.

HUSENE, or HUENA, a ſmall iſland in the Baltic Sea, in the Sound, where was the famous obſervatory of Tycho Brahe. E. Long. 13. 5. N. Lat. 55. 54.

HUET (Peter Daniel), a very learned French writer, born at Caen in Normandy, on the 8th of February 1630. He diſcovered, from his infancy, a great inclination to the ſtudy of polite literature and the ſciences, and at firſt applied himſelf to the law; but Des Cartes's principles, and Bochart's ſacred geography, made him change his ſtudies for thoſe of philoſophy, mathematics, the languages, and antiquities. His admiration for Bochart made him deſirous of knowing him. He contracted a very ſtrict friendſhip with him, and accompanied that learned man to Sweden. Here Chriſtina would have engaged him in her ſervice; but he, ſenſible of her inconſtant temper, returned to France. All he brought with him was a copy of a MS. of Origen, which he tranſcribed at Stockholm. He refuſed ſeveral offers from Chriſtina after ſhe abdicated and went to Rome, and from Guſtavus her ſucceſſor. In 1670, Mr Boſſuet being appointed by the king preceptor to the dauphin, his majeſty chooſe Mr Huet for his colleague, with the title of *ſub preceptor to the prince*. It was he that formed the plan of the commentaries *in uſum Delphini*, and directed the execution. His ſentiments of piety determined him to enter into holy orders, which he did at the age of 46. Soon after this, he was preſented by the king to the abbey of Aunay; and in 1685 was nominated to the biſhopric of Soiſſons, which he exchanged for the ſee of Avranches. After governing that dioceſe ten years, he reſigned, and was made abbot of Fontenay near Caen. His love to his native place determined him to fix there. But lawſuits coming upon him, he retired to Paris, and lodged among the Jeſuits in the *Maiſon Profeſſe*, whom he had made heirs to his library. A ſevere diſtemper weakened his body extremely, but not the vivacity of his genius; he wrote his own life in a very elegant ſtyle; and died in 1721, aged 91. He was a man of very agreeable converſation; and of great probity, as well as immenſe erudition.—The following are the titles of his principal works. 1. *De claris interpretibus, et de optimo genere interpretandi.* 2. An edition of Origen's commentaries on the holy Scriptures, in Greek and Latin. 3. A treatiſe on the origin of the Romans. 4. *Demonſtratio evangelica*, folio. 5. *Quæſtiones Alnetanæ de concordia rationis et fidei.* 6. Of the ſituation of the terreſtrial paradiſe, in French. 7. A hiſtory of the commerce and navigation of the ancients, which has been tranſlated into Engliſh. 8. *Commentarius de rebus ad eum pertinentibus.* 9. *Huetiana.* 10. Latin and Greek verſes, &c.

HUGHES (John), an ingenious and polite writer, was born in 1677. In the earlieſt parts of his youth, he cultivated the ſiſter-arts, poetry, drawing, and muſic, in each of which he by turns made a conſiderable progreſs; but followed thoſe and his other ſtudies only as agreeable amuſements, under frequent confinement on account of his ill ſtate of health. The lord Chancellor Cowper made him ſecretary for the commiſſions of the peace without his knowledge, and diſtinguiſhed him with ſingular marks of his eſteem. He continued in the ſame employment under the earl of Macclesfield, and held it to the day of his death; which happened in 1719, the very night in which his tragedy, intitled *The ſiege of Damaſcus*, was firſt acted. He was then 42. He tranſlated Fontenelle's dialogues of the dead, Vertot's revolutions of Portugal, and the letters of Abelard and Eloiſa. He gave a very accurate edition of Spencer's works, with his life, a gloſſary, and remarks; and wrote ſeveral papers, in the Tatler, Spectator, and Guardian. Mr Duncombe, who married his ſiſter, collected his poems and eſſays in 2 vols 12mo, in 1735.

HUGHLY, a town of Aſia, in the kingdom of Bengal, ſeated on the moſt weſterly branch of the river Ganges. It is of large extent, reaching about two miles along the river-ſide, and drives a great trade in all the commodities of that country; affording rich cargoes for 50 or 60 ſhips annually, beſides what is brought on carriages to the neighbouring towns. Saltpetre is brought hither from Patnia in veſſels above 50 yards long and five broad. The inhabitants are chiefly Indians; but there are alſo Portugueſe, Engliſh, and other Europeans. E. Long. 87. 55. N. Lat. 22. 0

HUGO CAPET, chief of the third race of the kings of France, being count of Paris and Orleans: he was raiſed to the throne for his military valour and public virtues in 987. See FRANCE, nº 28.

HUGONIA, in botany: A genus of the decandria order, belonging to the monadelphia claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is pentapetalous; the fruit is a plum with a ſtriated kernel.

HUGUENOTS, an appellation given by way of contempt to the reformed or Proteſtant Calviniſts of France.

The name had its firſt riſe in 1560; but authors are not agreed as to the origin and occaſion thereof: but one of the two following ſeems to be the leaſt forced derivation.

One of the gates of the city of Tours is called the gate Fourgon, by corruption from *ſeu Hugon*, i. e. the gate Hugon. This Hugon was once count of Tours, according to Eginhardus, in his life of Charles the Great, and to ſome other hiſtorians. He was it ſeems a very wicked man, who by his fierce and cruel temper made himſelf dreadful; ſo that after his death he was ſuppoſed to walk about in the night-time, beating all thoſe he met with: this tradition the judicious Thuanus has not ſcrupled to mention in his hiſtory. Davila and other hiſtorians pretend, that the nickname of *Huguenots* was firſt given to the French Proteſtants, becauſe they uſed to meet in the night time in ſubterraneous vaults near this gate of Hugon; and what ſeems to countenance this opinion is, that they were firſt called by the name of *Huguenots* at this city of Tours.

Others aſſign a more illuſtrious origin to that name; and ſay that the leaguers gave it to the reformed, becauſe they were for keeping the crown upon the head of the preſent line deſcended from Hugh Capet; whereas they were for giving it to the houſe of Guiſe, as deſcended from Charles the Great.

Others again derive it from a French and faulty pronunciation of the German word *eidgnoſſen*, ſignifying confederates, and originally applied to that valiant part of the city of Geneva, which entered into an alliance with the Swiſs cantons, in order to maintain their liberties againſt the tyrannical attempts of Charles III. duke of Savoy.

Theſe confederates were called *Eignots*, whence Huguenots.

The perſecution which they underwent has ſcarce its parallel in the hiſtory of religion: though they obtained a peace from Henry III. in 1576, it was only of ſhort continuance; and their ſufferings, mitigated by the famous edict of Nantes, granted to them in 1598 by Henry IV. were again renewed, after the revocation of this edict, by Louis XIV. in 1685.

HULK, an old ſhip of war, fitted with an apparatus, to fix or take out the maſts of his majeſty's ſhips, as occaſion requires.

The maſt of this veſſel is extremely high, and withal properly ſtrengthened by *ſhrouds and ſtays*, in order to ſecure what are called the *ſheers*, which ſerve, as the arm of a crane, to hoiſt out or in the maſts of any ſhip lying alongſide. The ſheers are compoſed of ſeveral long maſts, whoſe heels reſt upon the ſide of the hulk, and having their heads declining outward from the perpendicular, ſo as to hang over the veſſel whoſe maſts are to be fixed or diſplaced. The tackles, which extend from the head of the maſt to the ſheer-heads, are intended to pull in the latter towards the maſt-head, particularly when they are charged with the weight of a maſt after it is raiſed out of any ſhip, which is performed by ſtrong tackles depending from the ſheer-heads. The effort of theſe tackles is produced by two capſterns, fixed on the deck for this purpoſe.

Hulk, is alſo a name beſtowed on any old veſſel laid by as unfit for further ſervice. It is probably derived from the ολκαδες, or veſſels of burthen, of the ancient Grecians.

HULL, in the ſea-language, is the main body of a ſhip, without either maſts, yards, ſails, or rigging. Thus *to ſtrike a Hull* in a ſtorm, is to take in her ſails, and to laſh the helm on the lee-ſide of the ſhip; and *to hull*, or *lie a-hull*, is ſaid of a ſhip whoſe ſails are thus taken in, and helm laſhed a-lee.

Hull, a river in Yorkſhire, which falls into the Humber at *Kingſton upon Hull*. See Kingston.

HUMAN, in general, is an appellation given to whatever relates to mankind: thus we ſay, the human ſoul, human body, human laws, &c.

HUMANITY, the peculiar nature of man, whereby he is diſtinguiſhed from all other beings.

Humanities, in the plural, ſignify grammar, rhetoric, and poetry, known by the name of *literæ humaniores*; for teaching of which, there are profeſſors in the univerſities of Scotland, called *humaniſts*.

HUMBER, a river formed by the Trent, Ouſe, Derwent, and ſeveral other ſtreams. By the late inland navigation, it has a communication with the rivers Merſey, Dee, Ribble, Severn, Thames, Avon &c. which navigation, including its windings, extends above 500 miles, in the counties of Lincoln, Nottingham, York, Lancaſter, Weſtmoreland, Cheſter, Stafford, Warwick, Leiceſter, Oxford, Worceſter. It divides Yorſhkire from Lincolnſhire, and falls into the German ocean near Holderneſs.

HUME (David, Eſq;) a late celebrated philoſopher and hiſtorian, was born in the ſouth part of Scotland on the 26th of April O. S. in the year 1711. Being the younger ſon of a country gentleman of good family, but no great fortune, his patrimony was of conſequence inſufficient to ſupport him. For this reaſon he was deſtined for the bar, and paſſed through his academical courſes in the univerſity of Edinburgh; but being more inclined to ſtudies of a different nature, he never put on the gown, nor even took the introductory ſteps neceſſary for that purpoſe. The writings of Locke and Berkely had directed the attention of the generality of learned men towards metaphyſics; and Mr Hume having early applied himſelf to ſtudies of this kind, publiſhed in 1739 the two firſt volumes of his *Treatiſe of human nature*, and the third the following year. He had the mortification, however, to find his book generally decried; and to perceive, that the taſte for ſyſtematic writing was now on the decline. He therefore divided this treatiſe into ſeparate Eſſays and Diſſertations, which he afterwards publiſhed at different times with alterations and improvements.

In 1742, Mr Hume publiſhed two ſmall volumes, conſiſting of Eſſays moral, political, and literary. Theſe were better received than his former publication; but contributed little to his reputation as an author; and ſtill leſs to his profit; and his ſmall patrimony being now almoſt ſpent, he accepted an invitation from the marquis of Annandale to come and live with him in England. With this nobleman he ſtaid a twelve-month; during which time his ſmall fortune was conſiderably increaſed. He then received an invitation from General St Clair, to attend him as a ſecretary on his expedition, which was at firſt meant againſt Canada, da, but afterwards ended in an excurſion againſt the coaſt of France. In 1747, he received an invitation from the general to attend him in the ſame ſtation in his military embaſſy to the courts of Vienna and Turin. He then wore the uniform of an officer; and was introduced at theſe courts as aid-de-camp to the general, along with Sir Harry Erſkine and captain Grant, afterwards general Grant. In 1749 he returned to Scotland, and lived two years with his brother at his country-houſe; where he compoſed the ſecond part of his eſſays, called *Political Diſcourſes*. And now the general approbation of his performances was indicated by a more extenſive ſale than formerly, and likewiſe by the numerous anſwers publiſhed by different perſons in order to counteract their ſuppoſed pernicious tendency. In 1752, were publiſhed at Edinburgh his Political Diſcourſes, the only work of his which was well received on its firſt appearance; and the ſame year, at London, his Inquiry concerning the Principles of Morals, which in his own opinion was incomparably the beſt of all his performances. This year alſo he was appointed librarian to the faculty of Advocates at Edinburgh; the principal advantage reſulting from which employment was, that he had by that means the command of a large library. He then formed the plan of writing the Hiſtory of England; but deeming the whole to be too extenſive, he confined his hiſtory to that of Britain under the houſe of Stuart. The book was almoſt univerſally decried on its firſt appearance, and ſoon after ſeemed to ſink in oblivion. Dr Herring primate of England, and Dr Stone primate of Ireland, were the only literati of the author's acquaintance who approved of the work, and ſent him meſſages not to be diſcouraged.

Notwithſtanding the approbation of theſe eminent men, however, Mr Hume's ſpirits were ſo much ſunk by his bad ſucceſs, that he had ſome thoughts of retiring to France, changing his name, and bidding adieu to his own country for ever; but his deſign was rendered impracticable by the breaking out of the war of 1755 between France and Britain. He then publiſhed his Natural Hiſtory of Religion; to which an anſwer was publiſhed, ſoon after its appearance, in the name of Dr Hurd biſhop of Litchfield and Coventry; of which, however, he hath ſince diſclaimed being the ſole author. In 1756, the ſecond volume of the Hiſtory of the Stuarts was publiſhed, two years after the appearance of the firſt. This was better received, and helped to retrieve the character of the former volume. Three years after, his Hiſtory of the Houſe of Tudor made its appearance; which was almoſt as ill received as the Hiſtory of the Stuarts had been, the reign of Elizabeth being particularly obnoxious. The author, however, had now learned to deſpiſe popular clamours; and continued to finiſh at his leiſure the more early part of the Engliſh hiſtory, which was publiſhed in 1761, and was received with tolerable ſucceſs.

Mr Hume being now turned of fifty, and having obtained by the ſale of his books a competent and independant fortune, retired into his native country of Scotland, determined never more to ſet his foot out of it. From this reſolution, however, he was diverted by the earl of Hertford; whom he attended as ſecretary on his embaſſy to Paris in 1763. In 1765, the earl being appointed lord lieutenant of Ireland, Mr Hume was entruſted with the ſole management of the buſineſs of the ſtate till the arrival of the duke of Richmond towards the latter end of the year. In 1767, he returned to Edinburgh, with a much larger income, procured to him by the earl of Hertford, than he formerly had; and now formed the ſame deſign he had formerly entertained, namely, of burying himſelf in his philoſophical retreat. In this, however, he was again diſappointed, by receiving an invitation from general Conway to be under ſecretary; and this invitation he was prevented from declining, both by the character of the perſon, and his connections with lord Hertford. In 1769 he returned to Edinburgh, poſſeſſed of L. 1000 a-year, healthy, and though ſomewhat ſtriken in years, yet having a proſpect of long enjoying his eaſe, and of ſeeing the increaſe of his reputation. Of his laſt illneſs and character, he himſelf gives the following account. "In ſpring 1775, I was ſtruck with a diſorder in my bowels; which at firſt gave me no alarm, but has ſince, as I apprehend it, become mortal and incurable. I now reckon upon a ſpeedy diſſolution. I have ſuffered very little pain from my diſorder; and what is more ſtrange, have, notwithſtanding the great decline of my perſon, never ſuffered a moment's abatement of my ſpirits; inſomuch, that were I to name the period of my life which I ſhould moſt chooſe to paſs over again, I might be tempted to point to this latter period. I poſſeſs the ſame ardour as ever in ſtudy, and the ſame gaiety in company. I conſider, beſides, that a man of ſixty-five, by dying, cuts off only a few years of infirmities; and though I ſee many ſymptoms of my literary reputation breaking out at laſt with an additional luſtre, I know that I could have but few years to enjoy it. It is difficult to be more detached from life than I am at preſent.

"To conclude, hiſtorically, with my own character, I am, or rather was (for that is the ſtyle I muſt now uſe in ſpeaking of myſelf, which emboldens me the more to ſpeak my ſentiments); I was, I ſay, a man of mild diſpoſitions, of command of temper, of an open, ſocial, and cheerful humour, capable of attachment, but little ſuſceptible of enmity, and of great moderation in all my paſſions. Even my love of literary fame, my ruling paſſion, never ſoured my temper, notwithſtanding my frequent diſappointments. My company was not unacceptable to the young and careleſs, as well as to the ſtudious and literary; and as I took a particular pleaſure in the company of modeſt women, I had no reaſon to be diſpleaſed with the reception I met with from them. In a word, though moſt men any wiſe eminent have found reaſon to complain of calumny, I never was touched, or even attacked, by her baleful tooth; and though I wantonly expoſed myſelf to the rage of both civil and religious factions, they ſeemed to be diſarmed in my behalf of their wonted fury. My friends never had occaſion to vindicate any one circumſtance of my character and conduct: not but that the zealots, we may well ſuppoſe, would have been glad to invent and propagate any ſtory to my diſadvantage, but they could never find any which they thought would wear the face of probability. I cannot ſay there is no vanity in making this funeral oration of myſelf, but I hope it is not a miſplaced one ; and this is a matter of fact which is eaſily cleared and aſcertained."

His fears concerning the incurableneſs of his diſorder proved too true. He died on the 25th of Auguſt 1770 ; and was interred in the Calton burying-ground, Edinburgh, where a monument is erected to his memory.

HUMECTATION, formed of humour, moiſture, moiſtening, in pharmacy, the preparing of a medicine, by ſteeping it a while in water, in order to ſoften and moiſten it when too dry ; or to cleanſe it, or prevent its ſubtile parts from being diſſipated in grinding, or the like.

Humecation is alſo uſed for the application of moiſtening remedies.

In this ſenſe we ſay, embrocations, emplaſters, unctions, humectations, fermentations, &c.

HUMERUS, or *Os Humeri*, in anotomy, the uppermoſt bone of the arm, popularly called the *ſhoulder-bone* ; extending from the ſcapula, or ſhoulder-blade, to the upper end of the cubitus, or elbow. See Anatomy, n° 47.

HUMIDITY, that quality in bodies whereby they are capable of wetting other bodies. This differs very much from fluidity ; and ſeems to be merely a relative thing, depending on the congruity of the component particles of the liquor to the pores of ſuch particular bodies as it is capable of adhering to, penetrating a little into, or wetting. Thus, for inſtance, quickſilver is not a moiſt thing with regard to our hands or clothes ; but may be called ſo in reference to gold, tin, or lead, to whoſe ſurfaces it will perfectly adhere, and render them ſoft and moiſt.

HUMILIATI, a congregation of religious in the church of Rome, eſtabliſhed by ſome Milaneſe gentlemen on their releaſe from priſon, where they had been confined under the emperor Conrad, of, as others ſay, under Frederick I. in the year 1162. This order, which acquired great wealth, and had no leſs than 90 monaſteries, was aboliſhed by pope Pius V. in 1570, and their houſes given to the Dominicans and Cordeliers for their luxury and cruelty.

HUMILIATION, the act of humbling, i. e. of abating a perſon's pride, and bringing him lower in his opinion.

In this ſenſe, humiliation ſtands diſtinguiſhed from mortification : humiliation brings down the mind ; mortification ſubdues the fleſh.

HUMILITY, in ethics, is a virtue conſiſting in the moderate value which a perſon puts upon himſelf, and every thing relating to him. Or, more particularly, it conſiſts in not attributing to ourſelves any excellence or good which we have not ; in not over-rating any thing which we have or do ; in not taking an immoderate delight in one's ſelf ; in not aſſuming more of the praiſe of a quality or action than belongs to us ; and in a lowly ſenſe and acknowledgment of our imperfections, errors, and ſins. This virtue expreſſes itſelf in the modeſty of our appearance, of our purſuits, and of our behaviour towards other men. It is diſtinguiſhed from affectation, baſhfulneſs, and meanneſs.

HUMMING-bird. See Trochilus.

HUMOUR, from the Latin *humor*, in its original ſignification, ſtands for moiſture in general ; from whence it has been reſtrained to ſignify the moiſture of animal bodies, or thoſe fluids which circulate through them.

It is diſtinguiſhed from moiſture in general in this, that humours properly expreſs the fluids of the body ; when, in a vitiated ſtate, it would not be improper to ſay, that the fluids of ſuch a perſon's body were full of humours.

The only fluids of the body, which, in their natural and healthful ſtate, are called *humours*, are thoſe in the eye ; we talk of the aqueous humour, the cryſtalline humour, without meaning any thing that is morbid or diſeaſed : yet, when we ſay in general, that ſuch a perſon has got a humour in his eye, we underſtand it in the uſual ſenſe of a vitiated fluid.

As the temper of the mind is ſuppoſed to depend upon the ſtate of the fluids in the body, humour has come to be ſynonymous with temper and diſpoſition. A perſon's humour, however, is different from his *diſpoſition*, in this, that humour ſeems to be the diſeaſe of a diſpoſition : it would be proper to ſay that perſons of a ſerious temper or diſpoſition of mind, were ſubject to melancholy humours ; that thoſe of a delicate and tender diſpoſition, were ſubject to peeviſh humours.

Humour may be agreeable or diſagreeable : but it is ſtill humour ; ſomething that is whimſical, capricious, and not to be depended upon. An ill-natured man may have fits of good-humour, which ſeem to come upon him accidentally, without any regard to the common moral cauſes of happineſs or miſery.

A fit of cheerfulneſs conſtitutes the whole of good-humour ; and a man who has many ſuch fits, is a good-humoured-man : yet he may not be good-natured ; which is a character that ſuppoſes ſomething more conſtant, equable, and uniform, than what was requiſite to conſtitute good humour.

Humour is often made uſe of to expreſs the quality of the imagination, which bears a conſiderable reſemblance to wit.

Wit expreſſes ſomething that is more deſigned, concerted, regular, and artificial ; humour, ſomething that is more wild, looſe, extravagant, and fantaſtical ; ſomething which comes upon a man by fits, which he can neither command or reſtrain, and which is not perfectly conſiſtent with true politeneſs. Humour, it has been ſaid, is often more diverting than wit ; yet a man of wit is as much above a man of humour, as a gentleman is above a buffoon ; a buffoon, however, will often divert more than a gentleman. The duke of Buckingham, however, makes humour to be all in all : wit, according to him, ſhould never be uſed, but to add an agreeableneſs to ſome proper and juſt ſentiment, which without ſome ſuch turn might paſs without its effect. See Wit.

HUMPHREY (Dr Lawrence), a very learned Engliſh divine in the 16th century, who during the perſecution under queen Mary, reired with other Proteſtant-refugees to Zurich. He returned on the acceſſion of queen Elizabeth ; and was made preſident of Magdalene college, Oxford, dean of Glouceſter, and then dean of Wincheſter. He was a great and general ſcholar, an able linguiſt, and a deep divine ; and publiſhed, 1. *De religionis conſervatione et reformatione, deque primatu regum*. 2. *De ratione interpretandi auctores*. 3. *Optimates ; ſive de nobilitate, ejuſque origine*. 4. Sermons, and other works. He died in 1590.

HUMULUS, the HOP: a genus of the pentandria order, belonging to the diœcia claſs of plants; and in the natural method ranking under the 53d order, *Scabridæ*. The male calyx is pentaphyllous; there is no corolla; the female calyx is monophyllous, patent obliquely, and entire, there is no corolla; but two ſtyles; and one ſeed within the calyx, the latter conſiſting of one large leaf. There is only one ſpecies, viz. he lupulus, which is ſometimes found wild in hedges near houſes and gardens, but probably is not indigenous. The ſtalk is weak and climbing; it creeps up the ſupport in the ſpiral, aſcending always from the right hand to the left. The ſtalk and the leaves are rough to the touch; the upper leaves are heart ſhaped, the lower ones divided into three lobes ſerated on the edges, and grow in pairs on long footſtalks. The male flowers grow on a diſtinct plant on branched peduncles; the females on peduncles in pairs of the form of a *ſtrobilus* or cone, compoſed of large imbricated calyces containing each one or two ſeeds. For the culture and uſes of hops, ſee the articles HOP and HUSBANDRY.

HUNDRED, HUNDREDUM, or *Centuria*, a part or diviſion of a county; which was anciently ſo called from its containing an hundred families, or from its furniſhing an hundred able men for the king's wars. After king Alfred's dividing England into counties, and giving the government of each county to a ſheriff, theſe counties were divided into hundreds, of which the conſtable was the chief officer. The grants of hundreds were at firſt made by the king to particular perſons; but they are not now held by grant or preſcription, their juriſdiction being devolved to the county-court; a few of them only excepted that have been by privilege annexed to the crown, or granted to ſome great ſubjects, and ſtill remain in the nature of a franchiſe.

HUNDRED-Court. This is only a larger *COURT-Baron*, being held for all the inhabitants of a particular hundred inſtead of a manor. The free ſuitors are here alſo the judges, and the ſteward the regiſter as in the caſe of a court-baron. It is likewiſe no court of record; reſembling the former in all points, except that in point of territory it is of a greater juriſdiction. This is ſaid by Sir Edward Coke to have been derived out of the county-court for the eaſe of the people, that they might have juſtice done them at their own doors, without any charge or loſs of time; but its inſtitution was probably co-eval with that of hundreds themſelves, which were formerly obſerved to have been introduced though not invented by ALFRED being derived from the policy of the ancient Germans. The *centeni*, we may remember, were the principal inhabitants of a diſtrict compoſed of different villages, originally in number an *hundred*, but afterwards only called by that name; and who probably gave the ſame denomination to the diſtrict out of which they were choſen. Cæſar ſpeaks poſitively of the judicial power exerciſed in *their* hundred-courts and courts-baron. "*Principes regionum, atque pagorum*," (which we may fairly conſtrue, the lord of hundreds and manors) "*inter ſuos jus dicunt, controverſiaſque minuunt.*" And Tacitus, who had examined their conſtitution ſtill more attentively, informs us not only of the authority of the lord, but that of the *centeni*, the hundredors, or jury; who were taken out of the common freeholders, and had themſelves a ſhare in the determination. "*Eliguntur in conciliis et principes, qui jura per pagos vicoſque reddunt: centeni ſingulis, explebe comites, conſilium ſimul et auctoritas, adſunt.*" This hundred-court was denominated *hæreda* in the Gothic conſtitution. But this court, as cauſes are equally liable to removal from hence as from the common court baron, and by the ſame writs, and may alſo be reviewed by writ of falſe judgment, is therefore fallen into equal diſuſe with regard to the trial of actions.

HUNGARY, a kingdom of Europe, the greateſt part of which was anciently called *Pannonia*. It had the name of *Hungary* from the Hunns, a Scythian ro Tartar nation, who ſubdued it in the ninth century. It lies between the 18th and 22d degrees of eaſt long. and betwixt the 45th and 49th degrees of north lat. being bounded to the north by the Carpathian mountains, which ſeparate it from Poland; to the ſouth by Servia, and the river Drave, which ſeparates it from Sclavonia; to the weſt by Moravia, Auſtria, and Stiria; and to the eaſt by Wallachia and Tranſylvania. It is about 240 miles in length, and 235 in breadth; and is divided into the upper and Lower Hungary, the former being that part which lies towards the eaſt, and the latter that which lies towards the weſt.

The northern parts of the kingdom are mountainous and barren, but healthy; the ſouthern, on the contrary, are level, and exceeding fruitful, but not very healthy. The country along the Danube, from Preſburg to Belgrade, for upwards of 200 miles, is one continued plain, and no ſoil can be more fertile; but the air by reaſon of the many ſwamps and moraſſes, is not ſo wholeſome as on the higher and drier grounds. Here are mines of gold, ſilver, copper, iron, lead, quickſilver, cinnabar, antimony, yellow orpiment, ſulphur, vitriol, marcaſite, ſalt native and factitious, ſaltpetre, magnets, aſbeſtos or ſtone-flax, marble of ſeveral colours, alabaſter, with diamonds, and all ſorts of precious ſtones. Corn is in ſuch plenty, that it is ſold for one ſixth of its price in England. Their grapes are large and luſcious; and their wines preferred to any in Europe. They have vaſt numbers of cattle and horſes, the latter moſtly mouſe-coloured, with buffaloes, deer, wild-fowl, game, and fiſh, and many ſpecies of wild-beaſts, particularly chamois, goats, bears, and lynxes. Of vegetables, beſides vines and the common ſorts, here are tobacco, ſaffron, buck-wheat, millet, melons, and cheſnuts. Here alſo are excellent warm baths, and ſprings of various kinds and qualities. The chief mountains of Hungary are the Crapack or Carpathian, which is the general name for all thoſe that ſeparate this kingdom from Poland, Moravia, Sileſia, and ſome part of Auſtria. The ſides of moſt of them are covered with wood, and their tops with ſnow. The chief rivers are the Danube, the Drave, the Save, the Wag or Waag, the Gran, the Temes, the Raab, and Thieſs, all well ſtocked with fiſh. There are ſeveral lakes among the Carpathian mountains, and ſome alſo in the lowlands.

The inhabitants are a mixture of the deſcendants of the ancient Hunns, Sclavonians, Camani, Germans, Wallachians, Greeks, Jews, Turks, and a wandering people called *Zigduns*, ſaid to be of uncertain origin, but probably the ſame as thoſe we called *gypſies*. The Hungarians are ſaid to be of a ſanguine choleric temper, and ſomewhat fierce, cruel, proud, and revengeful. They have been always reputed good ſoldiers, being much more inclined to arms, martial exerciſes, and hunting, than to arts, learning, trade, or agriculture. The nobility affect great pomp and magnificence, and are much addicted to feaſting and carouſing. The men in general are ſtrong and well proportioned. They ſhave their beards but leave whiſkers on the upper-lip; wearing fur caps on their heads, a cloſe-bodied coat girt with a ſaſh, with a ſhort cloak or mantle over all, ſo contrived as to be buckled under their arm, and leave the right hand at liberty. Their horſe are called *huſſars*, and their foot *heydukes*. The former wear a broad-ſword, or ſcymeter, and carry a hatchet or battle-ax. Their horſes are fleet, but not near ſo large as the German horſes, and therefore they ſtand up on their ſhort ſtirrups when they ſtrike. The heydukes uſually wear feathers in their caps, according to the number of the enemies they pretend to have killed. Both horſe and foot are an excellent militia, very good at a purſuit, or ravaging and plundering a country, but not equal to regular troops in a pitched battle. The women, when they go abroad, wear ſhort cloaks and a veil.

There are four languages ſpoken in this country, viz. the Hungarian, which like the people, is of Scythian origin, and has little or no affinity with any European tongue; the German, Sclavonian, Wallachian, and Latin. The laſt is ſpoken not only by the better ſort, but alſo by the common people, though very corruptly. The people called *Zigduns* have alſo a particular jargon.—Chriſtianity was planted in Hungary in the ninth and tenth centuries. In the ſixteenth the reformation made a great progreſs in it; but at preſent, though the Roman catholics hardly make a fourth part of the inhabitants, their religion is predominant, the Proteſtants enjoying only a bare toleration. Beſides ſeveral ſects of Proteſtants, here are alſo great numbers of the Greek church and Jews; the laſt pay double taxes of all kinds. Beſides Jeſuits colleges and other convents, there are ſeveral univerſities for the Roman-catholics. The Lutherans alſo and Calviniſts have their gymnaſiums and ſchools, but under divers reſtrictions.

As to the traffic of this country, it is almoſt wholly in the hands of the Greeks and Jews. The exports conſiſt chiefly of wine, horſes, cattle, metals, minerals ſaffron, wool, and leather. Hungary, in particular furniſhes Auſtria, and other countries weſt of it, with vaſt droves of cattle, as well as variety of excellent wines, of which thoſe of Tockay are reckoned the beſt. The principal manufactures are thoſe of copper, braſs, iron, and other hard wares. Great quantities of braſs and iron are exported, wrought and unwrought.

Hungary at firſt, like moſt other countries, was divided into many little principalities and ſtates, which at length were united under one head, who had the title of *duke*. The laſt of theſe dukes was Geyſa: who, becoming a proſelyte to Chriſtianity, was baptized; after which he reſigned the government to his ſon Stephen who took the title of *king*, *anno* 1000. But as the throne was filled by election, though generally out of the ſame family, the diſpoſal of the crown was diſputed between the Turkiſh and German emperors for near 200 years; but after the year 1527, when Ferdinand archduke of Auſtria was advanced to the throne, the Auſtrians found means to influence the elections in ſuch a manner, as to keep the crown in their family till 1687, when it was ſettled hereditarily on their heirs male; and now, in conſequence of an act made by the diet at Preſburg in 1723, in caſe of the failure of heirs-male, it is to deſcend to females. The ſtates of the kingdom conſiſt of the prelates, the barons, the gentry, and the royal towns. To the firſt claſs belong two archbiſhops, about a dozen biſhops, near as many abbots and provoſts, with the Pauline and Præmonſtratenſian Jeſuits. To the ſecond, the ſtadtholder or palatine, who repreſents the king: the court-judge; the ban or viceroy of Dalmatia, Croatia, and Sclavonia; the ſtadtholder of Tranſilvania; the great treaſurer, the great cup-bearer, the ſteward of the houſehold, the maſter of the horſe, the lord chamberlain, the captain of the yeomen of the guards, and the grand-marſhal of the courts who are ſtyled the great barons, together with the inferior bans or counts and barons. To the third claſs belong the gentry, ſome of whom have noble manors, and others only the privileges of nobles. To the fourth claſs belong the royal free cities, which are not ſubject to the counts, but hold immediately of the king. The gentry alſo, who hold of the archbiſhops, and biſhops, have the ſame privileges as the Hungarian nobility. The common people are vaſſals to the lords, on whoſe lands they live, whether theſe lands belong to the crown, the clergy, nobility, or gentry.

The ordinary revenue of this kingdom is ſaid to exceed a million Sterling, ariſing from the mines, duties on cattle, royal demeſnes, ſalt-works, contributions, cuſtoms, &c. The fortifications and garriſons conſtantly maintained on the frontiers againſt the Turks, are a great expence to the government. Hungary can eaſily bring into the field 100,000 men, regulars and militia; for there are 50,000 in actual pay, and the provinces furniſh the other 50,000 when they are wanted.

Hungary-Water, a diſtilled water prepared from the tops of flowers of roſemary; ſo denominated from a queen of Hungary, for whoſe uſe it was firſt made. See Pharmacy.

HUNGER, an uneaſy ſenſation occaſioned by long abſtinence from food when the body is in a healthy ſtate.—See Abstinence; Fasting; and Anatomy, n° 103.

The following uſeful obſervations upon hunger or famine are extracted from a paper by Dr Percival in the ſecond volume of the Mancheſter Tranſactions.

In famine, life may be protracted (the Doctor obſerves) with leſs pain and miſery, by a moderate allowance of water. For the acrimony and putrefaction of the humours are obviated by ſuch dilution, the ſmall veſſels are kept permeable, and the lungs are furniſhed with that moiſture which is eſſential to the performance of their functions. Fontanus, a writer of reſpectable authority in the eſtimation of Morgagni, relates the hiſtory of a woman who obſtinately refuſed to take any ſubſiſtence, except twice, during the ſpace of 50 days, at the end of which period ſhe died. But he adds, that ſhe uſed water by way of drink, though in ſmall quantity. Redi, who made many experiments (cruel and unjuſtifiable in my opinion), to aſcertain the effects of faſting on fowls, obſerved, that none were able to ſupport life beyond the ninth day to whom drink was denied; whereas one indulged with water lived more than 20 days.

Hippocrates has obſerved, that children are more affected by abſtinence than young perſons; theſe, more than the middle aged; and the middle aged, more than old men. The power to endure famine, however, muſt depend no leſs upon the ſtate of health and ſtrength than on the age of the ſufferer. There are alſo particular conſtitutions which do not ſuffer much pain from the calls of hunger. Dr Percival was informed by a young phyſician from Geneva, that when he was a ſtudent at Montpelier, he faſted three nights and four days, with no other refreſhment than a pint of water daily. His hunger was keen, but never painful, during the firſt and ſecond days of his abſtinence; and the two following days, he perceived only a faintneſs when he attempted either bodily or mental exertion: A ſenſe of coldneſs was diffuſed over his whole frame, but more particularly affected the extremities. His mind was in a very unuſual ſtate of puſillanimity; and he experienced a great tendency to tears whenever he recollected the circumſtance which had been the occaſion of his faſting. During the whole period, the alvine excretions were ſuppreſſed, but not thoſe by the kidneys: and at the cloſe of it, his ſkin became tinged with a ſhade of yellow. The firſt food he took was veal broth; which had ſomething of an intoxicating effect, producing a glow of warmth, and raiſing his ſpirits, ſo as to render him aſhamed of his deſpondency. Perhaps in the caſe of Sextius Baculus, as recorded in the commentaries of Cæſar*, the extraordinary courage and proweſs which he ſuddenly exerted, might be aided by the exhilerating effect of ſuſtenance, which, under ſuch circumſtances, it is probable he would no longer decline. The fact, however, evinces, that neither his ſickneſs nor the ſenſations of hunger had been ſo violent as much to impair his ſtrength of body or vigour of mind. Pomponius Atticus, the celebrated friend of Cicero, who put a voluntary end to his life in the 77th year of his age by refuſing all food, appears to have experienced eaſe from his diſorder, rather than any acute ſufferings by famine. "Sic cum biduò cibo ſe abſtinuiſſet, ſubito febris deceſſit, leviorque morbus eſſe cæpit: tamen propoſitum nihilo ſecius perigit. Itaque die quinto, poſtquam id conſilium inierat, deceſſit." (*Corn. Nepos in Vit. Pomp. Attic.*) From the former circumſtance it has been conjectured, that he did not wholly deny himſelf the uſe of water, or of ſome other diluent. But though a few examples of this kind may be adduced, we have the evidence of numerous melancholy facts to ſhow, that the preſſure of want is agonizing to the human frame. "I have talked (ſays an ingenious writer†), with the captain of a ſhip who was one of ſix that endured it in its extremity, and who was the only perſon that had not loſt his ſenſes when they received accidental relief. He aſſured me his pains at firſt were ſo great, as to be often tempted to eat a part of one of the men who died, and which the reſt of his crew actually for ſome time lived upon: He ſaid, that during the continuance of this paroxyſm, he found his pains inſupportable, and was deſirous at one time of anticipating that death which he thought inevitable: But his pains, he ſaid, gradually decreaſed after the ſixth day (for they had water in the ſhip, which kept them alive ſo long), and then he was in a ſtate rather of langour than deſire; nor did he much wiſh for food, except when he ſaw others eating; and that for a while revived his appetite, though with diminiſhed importunity. The latter part of the time, when his health was almoſt deſtroyed, a thouſand ſtrange images roſe upon his mind; and every one of his ſenſes began to bring him wrong information. The moſt fragrant perfumes appeared to him to have a fetid ſmell; and every thing he looked at took a greeniſh hue, and ſometimes a yellow. When he was preſented with food by the ſhip's company that took him and his men up, four of whom died ſhortly after, he could not help looking upon it with loathing inſtead of deſire; and it was not till after four days that his ſtomach was brought to its natural tone; when the violence of his appetite returned with a ſort of canine eagerneſs."

To thoſe who by their occupations are expoſed to ſuch dreadful calamities, it is of ſerious importance to be inſtructed in the means of alleviating them. The American Indians are ſaid to uſe a compoſition of the juice of tobacco, and the ſhells of ſnails, cockles, and oyſters calcined, whenever they undertake a long journey, and are likely to be deſtitute of proviſions. It is probable the ſhells are not burnt into quicklime, but only ſo as to deſtroy their tenacity, and to render them fit for levigation. The maſs is dried, and formed into pills, of a proper ſize to be held between the gum and lip, which, being gradually diſſolved and ſwallowed, obtund the ſenſations both of hunger and of thirſt. Tobacco, by its narcotic quality, ſeems well adapted to counteract the uneaſy impreſſions which the gaſtric juice makes on the nerves of the ſtomach when it is empty; and the combination of teſtaceous powders with it may tend to correct the ſecretion that is ſuppoſed to be the chief agent in digeſtion, and which, if not acid, is always united with acidity. Certain at leaſt it is, that their operation is both grateful and ſalutary; for we find the luxurious inhabitants of the Eaſt Indies mix them with the betel-nut, to the chewing of which they are univerſally and immoderately addicted. Perhaps ſuch abſorbents may be uſefully applied, both to divide the doſes and to moderate the virulence of the tobacco. For, in the internal exhibition of this plant, much caution is required, as it produces ſickneſs, vertigo, cold clammy ſweats, and a train of other formidable ſymptoms, when taken in too large a quantity. During the time of war, the impreſſed ſailors frequently bring on theſe maladies, that they may be admitted into the hoſpitals, and releaſed from ſervitude. It would be an eaſy and ſafe experiment to aſcertain the efficacy, and to adjuſt the ingredients, of the Indian compoſition mentioned. And there is reaſon to believe, that the trial would be in ſome degree ſucceſsful: for it is known that ſmoking tobacco gives relief in thoſe habitual pains of the ſtomach which appear to ariſe from the irritation of the gaſtric ſecretions. The like effect is ſometimes produced by increaſing the flow of ſaliva, and ſwallowing what is thus diſcharged. And Dr Percival has related the

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* *Lib.* 6.

† *Dr Goldſmith's Hiſt. of the Earth*, vol. ii. 126.

the caſe of a gentleman, who uſed to maſticate, many hours daily, a piece of lead, which being neither hard, friable, nor offenſive to the palate, ſuited his purpoſe, as he thought, better than any other ſubſtance. He continued the cuſtom many years, deriving great eaſe from it, and ſuffering no ſenſible injury from the poiſonous quality of the metal. On mentioning this fact to a navy ſurgeon, the Doctor was told, that the ſailors, when in hot climates, are wont to mitigate thirſt by rolling a bullet in their mouths. A more innocent mean, the Doctor obſerves, might be deviſed; but the efficacy of this evinces, that the ſalivary glands are for a while capable of furniſhing a ſubſtitute for drink. When a ſcarcity of water occurs at ſea, Dr Franklin has adviſed, that the mariners ſhould bathe themſelves in tubs of ſalt-water: For, in purſuing the amuſement of ſwimming, he obſerved, that, however thirſty he was before immerſion, he never continued ſo afterwards; and that, though he ſoaked himſelf ſeveral hours in the day, and ſeveral days ſucceſſively in ſalt-water, he perceived not, in conſequence of it, the leaſt taſte of ſaltneſs in his mouth. He alſo further ſuggeſts, that the ſame good effect might perhaps be derived from dipping the ſailors' apparel in the ſea; and expreſſes a confidence that no danger of catching cold would enſue.

To prevent the calamity of famine at ſea, it has been propoſed by Dr Lind, that the powder of ſalep ſhould conſtitute part of the proviſions of every ſhip's company. This powder and portable ſoup, diſſolved in boiling water, form a rich thick jelly; and an ounce of each of theſe articles furniſhes one day's ſubſiſtence to a healthy full grown man. Indeed, from Dr Percival's experiments it appears, that ſalep contains more nutritious matter, in proportion to its bulk, than any other vegetable production now uſed as food. It has the property alſo of concealing the nauſeous taſte of ſalt-water; and conſequently may be of great advantage at ſea, when the ſtock of freſh water is ſo far conſumed, that the mariners are put upon ſhort allowance. By the ſame mucilaginous quality, it covers the offenſiveneſs, and even, in ſome meaſure, corrects the acrimony of ſalted and putreſcent meats. But, as a preſervative againſt hunger, ſalep would be moſt efficacious combined with an equal weight of beef ſuet. By ſwallowing little balls of this lubricating compound at proper intervals, the coats of the ſtomach would be defended from irritation: and as oils and mucilages are highly nutritive, of ſlow digeſtion, and indiſpoſed to paſs off by perſpiration, they are peculiarly well adapted to ſupport life in ſmall quantities. This compoſition is ſuperior in ſimplicity, and perhaps equal in efficacy, to the following one, ſo much extolled by Avicenna the celebrated Arabian phyſician; to whom we are indebted for the introduction of rhubarb, caſſia, tamarinds, and ſenna, into the materia medica. "Take ſweet almonds and beef ſuet, of each one pound; of the oil of violets two ounces; and of the roots of marſh mallows one ounce: bray theſe ingredients together in a mortar, and form the maſs into boluſes, about the ſize of a common nut." Animal fat is ſingularly powerful in aſſuaging the moſt acute ſenſations of thirſt, as appears from the narrative of the ſufferings experienced by thoſe who were confined in the black hole at Calcutta. A hundred and forty-ſix perſons, exhauſted by fatigue and military duty, were there thruſt together into a chamber of 18 cubic feet, having only two windows, ſtrongly barred with iron, from which, in a cloſe ſultry night, and in ſuch a climate as that of Bengal, little or no circulation of freſh air could be enjoyed. In a few minutes, theſe unhappy wretches fell into ſo profuſe a perſpiration, that an idea can hardly be formed of it; and this was ſucceeded by a raging thirſt, which increaſed in proportion as the body was drained of its moiſture. Water! Water! became the univerſal cry; and an old ſoldier on the outſide, through pity, furniſhed them with a few ſkinfuls of it. But theſe ſcanty ſupplies, like ſprinklings on the fire, ſerved only to feed and increaſe the flame. From this experience of its effects, Mr Howel, their chief, determined to drink no more; and kept his mouth moiſt by ſucking the perſpiration out of his ſhirt ſleeves, and catching the drops as they fell from his head and face. "You cannot imagine (ſays he) how unhappy I was if any of them eſcaped me." He came into the priſon without his coat, the ſeaſon being too hot to bear it: and one of his miſerable companions, obſerving the expedient he had hit upon of allaying his thirſt, robbed him from time to time of a conſiderable part of his ſtore. This plunderer, whom he found to be a young gentleman in the ſervice of the Eaſt India Company, afterwards acknowledged, that he owed his life to the many comfortable draughts which he derived from him. Before Mr Howel adopted this mode of relief, he had attempted, in an ungovernable fit of thirſt, to drink his own urine: but it was ſo intenſely bitter, that a ſecond taſte could not be endured; whereas, he aſſures us, no Briſtol water could be more ſoft and pleaſant than his perſpiration. And this, we may preſume, conſiſted chiefly of animal fat, melted by exceſſive heat, and exuding from the cellular membrane through the pores of the ſkin.

Perſons who have been accuſtomed to animal food, are ſoon reduced when ſupplied only with the farinacea. Several years ago, to determine the comparative nutritive powers of different ſubſtances, an ingenious young phyſician, as Dr Percival informs us, made a variety of experiments on himſelf, to which he unfortunately fell a ſacrifice. He lived a month upon bread and water; and under this regimen of diet he every day diminiſhed much in his weight. But in 1784, a ſtudent of phyſic at Edinburgh confined himſelf for a longer ſpace of time to a pint of milk and half a pound of white bread daily: And he aſſured our author, that he paſſed through the uſual labours of ſtudy and exerciſe, without feeling any decay of health or ſtrength, and without any ſenſible loſs of bulk. The cutaneous, urinary, and alvine excretions, were very ſcanty during the whole period; and the diſcharge of fæces occurred only once in a week. In this caſe the oily and coagulable parts of the milk probably furniſhed a larger proportion of aliment, and at the ſame time contributed to check the waſte by perſpiration and other diſcharges; for oleaginous ſubſtances are retained long in the body by their viſcidity. Dr Ruſſel, in his Natural Hiſtory of Aleppo, relates, that in thoſe ſeaſons when oil abounds, the inhabitants, by indulgence in it, ~~are~~ diſpoſed to fever, and affected with infarctions of the lungs; maladies which indicate both retention and obſtruction. Milk has been ſufſuſpected by ſome of producing ſimilar effects, though in a ſlighter degree; and the free uſe of it has been on this account forbidden to aſthmatics.

Gum arabic might be a good ſubſtitute for ſalep in the compoſition already recommended; and as it will give ſuch firmneſs to the maſs, as to require manducation, the ſaliva, by this means ſeparated and carried into the ſtomach, would further contribute to aſſuage the ſenſations both of hunger and of thirſt. See *Gum-Arabic*. This gum, combined with ſugar and the whites of eggs, has been lately extolled in France, under the name of *patigumo*, as a remedy for catarrhal defluxions. Dr Percival has ſeen cakes made of theſe ingredients, and thinks they might very well be applied to the purpoſe of obviating hunger. They are not periſhable in the hotteſt climates, may be carried about the perſon with convenience, and though very tough are pleaſant to the taſte. In the formula by which they are made, the proportion of ſugar is too large, and that of gum arabic too ſmall, if the maſs be intended to aſſuage the cravings of appetite. According to our author's information, the receipt is as follows. "Take of fine ſugar four ounces, and of gum arabic one ounce: Levigate them well together; and add half an ounce of roſe water, and of the white of eggs a ſufficient quantity."

In our attempts to recover thoſe who have ſuffered under the calamities of famine, great circumſpection is required. Warmth, cordials, and food, are the means to be employed; and it is evident that theſe may prove too powerful in their operation, if not adminiſtered with caution and judgment. For the body, by long faſting, is reduced to a ſtate of more than infantile debility; the minuter veſſels of the brain, and of the other organs, collapſe for want of fluids to diſtend them; the ſtomach and inteſtines ſhrink in their capacity; and the heart languidly vibrates, having ſcarcely ſufficient energy to propel the ſcanty current of blood. Under ſuch circumſtances, a proper application of heat ſeems an eſſential meaſure, and may be effected by placing on each ſide a healthy man in contact with the patient. Pediluvia or fomentations may alſo be uſed with advantage. The temperature of theſe ſhould be lower than that of the human body, and gradually increaſed according to the effects of their ſtimulus. New milk, weak broth, or water gruel, ought to be employed both for the one and the other; as nutriment may be conveyed into the ſyſtem this way, by paſſages probably the moſt pervious in a ſtate of faſting, if not too long protracted. "A lad at New-market†, a few years ago, having been almoſt ſtarved in order that he might be reduced to a proper weight for riding a match, was weighed at nine o'clock in the morning, and again at ten; and he was found to have gained near thirty ounces in weight in the courſe of an hour, though he had only drank half a glaſs of wine in the interval. The wine probably ſtimulated the action of the nervous ſyſtem, and incited nature, exhauſted by abſtinence, to open the abſorbent pores of the whole body, in order to ſuck in ſome nouriſhment from the air." But no ſuch abſorption as this can be expected in a ſtate of extreme weakneſs and emaciation gradually induced; becauſe the lymphatics muſt partake of the general want of tone and energy. And notwithſtanding the ſalutary effects of wine in the caſe of the jockey, who, it is likely, had been reduced by ſweating as well as by abſtinence, ſuch a ſtimulant might prove dangerous, and even fatal in other caſes. It appears ſafer therefore to adviſe the exhibition of cordials in very ſmall doſes, and at firſt conſiderably diluted. Slender wine-whey will perhaps beſt anſwer this purpoſe; and afford, at the ſame time, an eaſy and pleaſant nouriſhment. When the ſtomach has been a little ſtrengthened, an egg may be mixed with the whey, or adminiſtered under ſome other agreeable form. The yolk of one was, to Cornaro, ſufficient for a meal; and the narrative of this noble Venetian, in whom a fever was excited by the addition of only two ounces of food to his daily allowance, ſhows, that the return to a full diet ſhould be conducted with great caution, and by very ſlow gradations.

† *Watſon's Chemical Eſſays*, vol. iii. p. 101.

HUNNS, a fierce and ſavage nation, who formerly inhabited that part of Sarmatia bordering on the Paulus Mæotis and the Tanais, the ancient boundary between Europe and Aſia. Their country, as deſcribed by Procopius, lay north of mount Caucaſus, which, extending from the Euxine to the Caſpian Seas, parts Aſiatic Sarmatia from Colchis, Iberia, and Albania; lying on the iſthmus between the two ſeas abovementioned. Here they reſided, unknown to other nations, and themſelves ignorant of other countries, till the year 376. At this time, an hind purſued by the hunters, or, according to ſome authors, an ox ſtung by a gad-fly, having paſſed the marſh, was followed by ſome Hunns to the other ſide, where they diſcovered a country much more agreeable than their own. On their return, having acquainted their countrymen with what they had ſeen, the whole nation paſſed the marſh, and, falling upon the Alans who dwelt on the banks of the Tanais, almoſt exterminated them. They next fell upon the Oſtrogoths, whom they drove out of their country, and forced to retire to the plains between the Boryſthenes and the Tanais, now known by the name of *Podolea*. Then attacking the Viſigoths, they obliged them to ſhelter themſelves in the moſt mountainous parts of their country; till at laſt the Gothick nations, finding it impoſſible to withſtand ſuch an inundation of barbarians, obtained leave from the emperor Valens to ſettle in Thrace.

The Hunns thus became maſters of all the country between the Tanais and Danube in 376, where they continued quietly till the year 388, when great numbers of them were taken into the pay of Theodoſius I. but, in the mean time, a party of them, called the *Nephthalite* or *White Hunns*, who had continued in Aſia, over-ran all Meſopotamia, and even laid ſiege to Edeſſa, where they were repulſed with great ſlaughter by the Romans. The European Hunns frequently paſſed the Danube, committing the greateſt ravages in the weſtern empire; ſometimes they fell upon the eaſtern provinces, where they put all to fire and ſword. They were often defeated and repulſed by the Romans, but the empire was now too weak to ſubdue or confine them from making excurſions; ſo that they continued to make daily encroachments, and became every day more formidable than before. In 441, the Hunns, under Attila, threatened the weſtern empire with total deſtruction. This monarch, having made himſelf maſter of all the northern countries from the confines of Perſia to the banks of the Rhine, invaded Mæſia, Thrace, Hunns.

Thrace, and Illyricum; where he made ſuch progreſs, that the emperor, not thinking himſelf ſafe in Conſtantinople, withdrew into Aſia. Attila then broke into Gaul; where he took and deſtroyed ſeveral cities, maſſacring the inhabitants with the greateſt cruelty. At laſt he was driven out with great ſlaughter by Aetius the Roman general and Theodoric king of the Goths, and could never afterwards make any great progreſs. About the year 452 or 453 Attila died, and his kingdom was immediately ſplit into a number of ſmall ones by his numerous children, who waged perpetual war with each other. The Hunns then ceaſed to be formidable, and became daily leſs able to cope with the other barbarous nations whom Attila had kept in ſubjection. Still, however, their dominion was conſiderable; and in the time of Charles the Great they were maſters of Tranſylvania, Walachia, Servia, Carniola, Carinthia, and the greater part of Auſtria, together with Boſnia, Sclavonia, and that part of Hungary which lies beyond the Danube. In the year 776, while Charles was in Saxony, two princes of the Hunns, Caganus and Jugunus, ſent ambaſſadors to him, deſiring his friendſhip and alliance. Charles received them with extraordinary marks of friendſhip, and readily complied with their requeſt. However, they entered, not long after, into an alliance with Taſſila duke of Bavaria, who had revolted from Charles, and raiſed great diſturbances in Germany. Charles diſſembled his reſentment till he had entirely reduced Bavaria, when he reſolved to revenge himſelf on the Hunns for thoſe ſuccours they had underhand given to his enemy. Accordingly, he ordered levies to be made throughout his dominions; and having by that means aſſembled a very numerous army, he divided it into two bodies, one of which he commanded himſelf, and the other he committed to the care of his generals. The two armies entered the country of the Hunns at different places, ravaged their country far and near, burnt their villages, and took all their ſtrong holds. This he continued for eight years, till the people were almoſt totally extirpated; nor did the Hunns ever afterwards ~~recover~~ themſelves, or appear as a diſtinct nation.

There were two different nations that went by the name of *Hunns;* the Nephthalite or White Hunns, and the Sarmatian or Scythian Hunns. The former inhabited a rich country, bordering to the north on Perſia, and at a great diſtance from the Sarmatian or Scythian Hunns, with whom they had no intercourſe nor the leaſt reſemblance either in their perſons or manners. They were a powerful nation, and often ſerved againſt the Romans in the Perſian armies; but in the reign of the emperor Zeno, being provoked by Perozes king of Perſia laying claim to part of their country, they defeated the Perſians in two pitched battles, ſlew their king, over-ran all Perſia, and held it in ſubjection for the ſpace of two years, obliged Cabades, the ſon and ſucceſſor of Perozes, to pay them a yearly tribute. Theſe Hunns, called by the writers of thoſe times the *white Hunns*, did not wander, like the others, from place to place; but, contented with their own country, which ſupplied them with all neceſſaries, they lived under a regular government, ſubject to one prince, and ſeldom made inroads, unleſs provoked either into the Perſian or Roman territories. They lived according to their own laws, and dealt uprightly with one another, as well as with the neighbouring people. Each of their great men uſed to chooſe 20 or more companions to enjoy with him his wealth, and partake of all his diverſions; but, upon his deceaſe, they were all buried with him in the ſame grave. This cuſtom ſavours of barbarity; but in every other reſpect, the Nephthalite were a far more civilized nation than the Scythian Hunns, who, breaking into the empire, filled moſt of the provinces of Europe with blood and ſlaughter.

Hunns, Hungerford.

The latter were, according to Ammianus Marcellinus, a ſavage people, exceeding in cruelty the moſt barbarous nations. They begin to practiſe their cruelty, ſays Jornandes, upon their own children the very firſt day they come into the world, cutting and mangling the cheeks of their males, to prevent the growth of hair, which they muſt have looked upon, contrary to the ſentiments of other nations, as unbecoming and unmanly. They had, perhaps, in this practice another view, which Jornandes ſeems to inſinuate elſewhere, *viz.* to ſtrike terror into the enemy with their countenances, thus deformed and covered with ſcars. They had no other food but roots and raw meat, being quite unacquainted with the uſe of fire, and no houſes at all, not even huts; but lived conſtantly expoſed to the air in the woods, and on the mountains, where, from their infancy, they were inured to hunger, thirſt, and all manner of hardſhips: nay, they had ſuch an averſion to houſes, which they called the *ſepulchres of the living*, that, when they went into other countries, they could hardly be prevailed upon to come within the walls of any houſe, not thinking themſelves ſafe when ſhut up and covered. They uſed even to eat and ſleep on horſeback, ſcarce ever diſmounting; which, in all likelihood, induced Zoſimus to write, that the Hunns could not walk. They covered their nakedneſs with goats ſkins, or the ſkins of a ſort of mice ſewed together. Day and night were indifferent to them, as to buying, ſelling, eating, and drinking. They had no law, nor any kind of religion; but complied with their inclinations, whatever they prompted them to, without the leaſt reſtraint, or diſtinction between good and evil. In war, they began the battle with great fury, and an hideous noiſe: but if they met with a vigorous oppoſition, their fury began to abate after the firſt onſet; and when once put into diſorder, they never rallied, but fled in the utmoſt confuſion. They were quite unacquainted with the art of beſieging towns; and authors obſerve, that they never attacked the enemy's camp. They were a faithleſs nation, and thought themſelves no longer bound by the moſt ſolemn treaties, than they found their advantage in obſerving them. Hence we often find them, upon the leaſt proſpect of obtaining more advantageous conditions, breaking into the Roman empire, in defiance of the moſt ſolemn oaths and engagements. Several corps of Hunns, after their coming into Europe, ſerved in the Roman armies againſt the Goths and other barbarous nations; nay, they were ready, for hire, to fight againſt each other, being blind to every other regard and conſideration.

HUNGERFORD, a town of Berkſhire in England, ſeated on the river Kennet, in a low and watery ſoil. It is a great thoroughfare in the Bath and Briſtol

ſtol road, 65 miles from London; and was formerly called *Ingleford-Charnamſtreet*. The conſtable of this town, who is choſen annually, is lord of the manor, which he holds immediately of the crown. They have a horn here which holds about a quart, and appears by an inſcription on it to have been given by John of Gaunt, together with a grant of the royal fiſhery, in a part of the river which abounds with good trouts and craw-fiſh. Here is a market on Wedneſdays, and fair in Auguſt.

HUNNINGUEN, a town of Germany, in Alſace, and in Suntgaw, ſubject to the French; ſeated on the Rhine, and fortified by Vauban. E. Long. 11. 40. N. Lat. 47. 42.

HUNTER, a name given to a horſe qualified to carry a perſon in the chace. The ſhape of the horſe deſigned for this ſervice, ſhould be ſtrong and well knit together, as the jockeys expreſs it. Irregular or unequal ſhapes in theſe creatures are always a token of weakneſs. The inequalities in ſhape which ſhow a horſe improper for the chace, are the having a large head and a ſmall neck, a large leg and a ſmall foot, and the like. The head of the hunter ſhould indeed always be large, but the neck ſhould alſo be thick and ſtrong to ſupport it. The head ſhould be lean, the noſtrils wide, and the windpipe ſtraight.

The hunter, in order to his behaving well in the field, ought to have great care and indulgence in the ſtable: he ought to have as much reſt and quiet as may be, to be kept well ſupplied with good meat, clean litter, and freſh water by him; he ſhould be often dreſſed, and ſuffered to ſleep as much as he pleaſes. He ſhould be ſo fed, that his dung may be rather ſoft than hard, and it muſt be of a bright and clean colour. All this may be eaſily managed by the continual obſervance and change of his food, as occaſion requires. After his uſual ſcourings he ſhould have exerciſes and maſhes of ſweet malt, or bread and beans: or wheat and beans mixed together, are to be his beſt food, and beans and oats his worſt.

Some very great ſportſmen are for keeping their horſes out at graſs all the buck-hunting ſeaſon, never taking them up into the ſtable at all, but allowing them in the field as much oats with their graſs as they will eat. The horſes may be thus rid three days in the week for the whole ſeaſon, and never damaged by it, nor ever ſhowing any marks of harm afterwards.

The whole ſhape of a horſe intended for a hunter, ſhould be this: The ears ſhould be ſmall, open, and pricked; or though they be ſomewhat long, yet if they ſtand up erect and bold like thoſe of a fox, it is a ſign of toughneſs or hardineſs. The forehead ſhould be long and broad, not flat; or, as it is uſually termed, *mare-faced*, but riſing in the middle like that of a hare; the feather ſhould be placed above the eye, the contrary being thought by ſome to threaten blindneſs. The eyes ſhould be full, large, and bright; the noſtrils not only large, but looking red and freſh within; for an open and freſh noſtril is always eſteemed a ſign of a good wind. The mouth ſhould be large, but deep in the wicks, and hairy. The wind-pipe ſhould be large, and appear ſtraight when he bridles his head; for if, on the contrary, it bends like a bow on his bridling, it is not formed for a free paſſage of the breath. This defect in a horſe is expreſſed among the dealers by the phraſe *cock throppled*. The head ſhould be ſet on to the neck, that a ſpace may be felt between the neck and the chine; when there is no ſuch ſpace, the horſe is ſaid to be bull-necked; and this is not only a blemiſh in the beauty of the horſe, but it alſo occaſions his wind not to be ſo good. The creſt ſhould be ſtrong, firm, and well-riſen; the neck ſhould be ſtraight and firm, not looſe and pliant; the breaſt ſhould be ſtrong and broad, the ribs round like a barrel, the fillets large, the buttocks rather oval than broad, the legs clean, flat, and ſtraight; and, finally, the mane and tail ought to be long and thin, not ſhort and buſhy, the laſt being counted a mark of dullneſs. When a hunter is thus choſen, and has been taught ſuch obedience, that he will readily anſwer to the rider's ſignals both of the bridle and hand, the voice, the calf of the leg, and the ſpurs: that he knows how to make his way forward, and has gained a true temper of mouth, and a right placing of his head, and has learned to ſtop, and to turn readily, if his age be ſufficiently advanced, he is ready for the field. It is a rule with all ſtaunch ſportſmen, that no horſe ſhould be uſed in hunting till he is full five years old; ſome will hunt them at four, but the horſe at this time is not come up to his true ſtrength and courage, and will not only fail at every tough trial, but will be ſubject to ſtrains and accidents of that kind, much more than if he were to be kept another year firſt, when his ſtrength would be more confirmed.

When the hunter is five years old, he may be put to graſs from the middle of May, till Bartholomew-tide; for the weather between theſe is hot, that it will be very proper to ſpare him from work. At Bartholomew-tide, the ſtrength of the graſs beginning to be nipped by froſts and cold dews, ſo that it is apt to engender crudities in the horſe, he ſhould be taken up while his coat is yet ſmooth and ſleek and put into the ſtable. When he is firſt brought home, he ſhould be put in ſome ſecure and ſpacious place, where he may evacuate his body by degrees, and be brought not all at once to the warm keeping; the next night he may be ſtabled up. It is a general rule with many not to clothe and ſtable up their horſes till two or three days after they are taken from graſs, and others who put them in the ſtable after the firſt night, yet will not dreſs and clothe them till three or four days afterward; but all this, except the keeping the horſe one day in a large and cold place, is needleſs caution.

There is a general practice among the grooms, in many places, of giving their hunters wheat-ſtraw as ſoon as they take them up from graſs. They ſay they do this to take up their bellies; but there ſeems much reaſon to diſapprove of this. The change is very violent, and the nature of the ſtraw ſo heating and drying, that there ſeems good reaſon to fear that the aſtringent nature of it would be prejudicial, more than is at firſt perceived. It is always found that the dung is hard after this food, and is voided with pain and difficulty, which is in general very wrong for this ſort of horſe. It is better therefore to avoid this ſtraw-feeding, and to depend upon moderate airing, warm clothing, and good old hay, and old corn, than to have recourſe to any thing of this kind.

When the horſe has evacuated all his graſs, and has been properly ſhod, and the ſhoes have had time to ſettle to his feet, he may be ridden abroad, and treated in this manner: the groom ought to viſit him early in the morning, at five o'clock in the long days, and at ſix in the ſhort ones; he muſt then clean out the ſtable, and feel the horſe's neck, flank, and belly, to find the ſtate of his health. If the flank feels ſoft and flabby, there is a neceſſity of good diet to harden it, otherwiſe any great exerciſe will occaſion ſwellings and goutineſs in the heels. After this examination, a handful or two of good old oats, well ſifted, ſhould be given him; this will make him have more inclination to water, and will alſo make the water ſit better on his ſtomach, than if he drank faſting. After this he is to be tied up and dreſſed. If in the doing of this he opens his mouth, as if he would bite, or attempts to kick at the perſon, it is a proof that the teeth of the curry-comb are too ſharp, and muſt be filed blunter. If after this he continues the ſame tricks, it is through wantonneſs, and he ſhould be corrected for it with the whip. The intent of currying being only to raiſe the duſt, this is to be bruſhed off afterwards with a horſe-tail nailed to a handle, or any other light bruſh. Then he is to be rubbed down with the bruſh, and duſted a ſecond time; he ſhould then be rubbed over with a wet hand, and all the looſe hairs, and whatever foulneſs there is, ſhould be picked off. When this is done, and he is wiped dry as at firſt, a large ſaddle-cloth is to be put on, reaching down to the ſpurring place; then the ſaddle is to be put on, and a cloth thrown over it that he may not take cold: then rub down his legs, and pick his feet with an iron picker, and let the mane and tail be combed with a wet mane-comb. Laſtly, it is a cuſtom to ſpurt ſome beer in his mouth juſt before the leading him out of the ſtable. He ſhould then be mounted, and walked a mile at leaſt to ſome running water, and then watered; but he muſt only be ſuffered to take about half his water at one drinking.

It is the cuſtom of many to gallop the horſe at a violent rate as ſoon as he comes out of the water; but this is extremely wrong for many reaſons. It endangers the breaking a horſe's wind more than any other practice, and often has been the occaſion of burſting very good horſes. It uſes them alſo to the diſagreeable trick we find in many horſes, of running away as ſoon as ever they come out of the water: and with ſome it makes them averſe to drinking, ſo that they will rather endure thirſt, and hurt themſelves greatly by it, than bring on the violent exerciſe which they remember always follows it. The better way is to walk him a little after he is out of the water, then put him to a gentle gallop for a little while, and after this to bring him to the water again. This ſhould be done three or four times, till he will not drink any more. If there is a hilly place near the watering place, it is always well to ride up to it; if otherwiſe, any place is to be choſen where there is free air and ſun. That the creature may enjoy the benefit of this, he is not to be galloped, but walked about in this place an hour, and then taken home to the ſtable. The pleaſure the horſe himſelf takes in theſe airings when well managed is very evident; for he will gape, yawn, and ſhrug up his body; and in theſe, whenever he ſhould ſtand ſtill to ſtale, dung, or liſten to any noiſe, he is not to be hindered from it, but encouraged in every thing of this kind.

The advantages of theſe airings are very evident; they purify the blood, teach the creature how to make his breathing agree with the reſt of the motions of his body, and give him an appetite to his food, which hunters and racers that are kept ſtalled up are otherwiſe very apt to loſe. On returning from airing, the litter of the ſtable ſhould be freſh, by ſtirring this and whiſtling, he will be brought to ſtale. Then he is to be led to his ſtall, and tied up, and again carefully rubbed down; then he ſhould be covered with a linen cloth next his body, and a canvas one over that, made to fit him, and reaching down to his legs. This, as the duke of Newcaſtle obſerves, is a cuſtom which we learned of the Turks, who are of all people the moſt nice and careful of their horſes. Over this covering there ſhould be put a body-cloth of ſix or eight ſtraps; this keeps his belly in ſhape, and does not hurt him. This clothing will be ſufficient while the weather is not very ſharp but in ſevere ſeaſons, when the hair begins to riſe and ſtart in the uncovered parts, a woollen cloth is to be added, and this will always prove fully ſufficient.

Different horſes, and different ſeaſons, make variety of the degree of clothing neceſſary; but there always is an obvious rule to point out the neceſſary changes, the roughneſs of the coat being a mark of the want of clothing, and the ſmoothneſs of it a proof that the clothing is ſufficient. Therefore if at any time the hair is found to ſtart, it is a notice that ſome farther clothing is to be added.

If the horſe ſweat much in the night, it is a ſign that he is over fed and wants exerciſe; this therefore is eaſily remedied. An hour or more after the horſe is come in from his airing, the groom ſhould give him a wiſp of clean hay, making him eat it out of his hand; after this let the manger be well cleaned out, and a quartern of oats clean ſifted be given him. If he eats up this with an appetite, he ſhould have more given him; but if he is ſlow and indifferent about it, he muſt have no more. The buſineſs is to give him enough, but not to cloy him with food.

If the horſe gets fleſh too faſt on this home feeding, he is not to be ſtinted to prevent it, but only his exerciſe increaſed; this will take down his fleſh, and at the ſame time give him ſtrength and wind. After the feeding in the morning is over, the ſtable is to be ſhut up, only leaving him a little hay on his litter. He need be no more looked at till one o'clock, and then only rubbed down, and left again till the time of his evening watering, which is four o'clock in the ſummer and three in the winter. When he has been watered, he muſt be kept out an hour or two, or more if neceſſary, and then taken home and rubbed as after the morning watering. Then he is to have a feed of corn at ſix o'clock, and another at nine at night; and being then cleaned, and his litter put in order, and hay enough left for the night, he is to be left till morning. This is the direction for one day, and in this manner he is to be treated every day for a fortnight; at the end of which time his fleſh will be ſo hardened, his wind ſo improved, and his mouth ſo quickened, and his gallop brought to ſo good a ſtroke, that he will be fit to be put to moderate hunting. During the time that he is uſed to hunting, he muſt be ordered on his days of reſt exactly as he is directed for the fortnight when he is in preparation ; but as his exerciſe is now greatly increaſed, he muſt be allowed a more ſtrengthening food, mixing ſome old ſplit beans at every feeding with his oats.

And if this is not found to be ſufficient, the following bread muſt be given : let two pecks of old beans and one peck of wheat be ground together, and made into an indifferently fine meal ; then knead it into dough with ſome warm water and a good quantity of yeaſt ; let it lie a time that it may riſe and ſwell, which will make the bread the lighter ; then make it into loaves of a peck each, and let it be baked in a ſlow oven, that it may be thoroughly done without being burnt ; when it is taken out of the oven, it muſt be ſet bottom upwards to cool : when it is one day old the cruſt is to be chipped off, and the crumb given him for food. When this is ready, he ſhould have ſome of it at leaſt once in the day ; but it is not to be made the only food, but ſome feeds are to be of oats alone, ſome of oats and this bread, and ſome of oats and beans mixed together. The making a variety in this manner being the beſt of all methods of keeping up the appetite, which is often apt to fail.

The day before the horſe is to hunt, he muſt have no beans, becauſe they are hard of digeſtion, but only ſome oats with his bread ; or if he will be brought to eat the bread alone, that will be beſt of all. His evening feed ſhould on this day be ſomewhat earlier than uſual ; and after this he is only to have a wiſp of hay out of the groom's hand till he return from hunting.

Dr Foart Simmons's account of the life and writings of Dr W. Hunter.

HUNTER (Dr William), a celebrated anatomiſt and phyſician, was born on the 23d of May 1718, at Kilbride in the county of Lanerk in Scotland. He was the ſeventh of ten children of John and Agnes Hunter, who reſided on a ſmall eſtate in that pariſh called *Long Calderwood*, which had been long in the poſſeſſion of his family. His great grandfather by his father's ſide, was a younger ſon of Hunter of Hunterſton, chief of the family of that name. At the age of fourteen his father ſent him to the college of Glaſgow. In this ſeminary he paſſed five years; and by his prudent behaviour and diligence acquired the eſteem of the profeſſors, and the reputation of being a good ſcholar. His father had deſigned him for the church ; but the idea of ſubſcribing to articles of faith was ſo repugnant to the liberal mode of thinking he had always adopted, that he felt an inſuperable averſion for his theological purſuits. In this ſtate of mind he happened to become acquainted with Dr Cullen, the late celebrated profeſſor at Edinburgh, who was then juſt eſtabliſhed in practice at Hamilton under the patronage of the duke of Hamilton. Dr Cullen's converſation ſoon determined him to lay aſide all thoughts of the church, and to devote himſelf to the profeſſion of phyſic. His father's conſent having been previouſly obtained, Mr Hunter in 1737 went to reſide with Dr Cullen. In the family of this excellent friend and preceptor he paſſed nearly three years ; and theſe, as he has been often heard to acknowledge, were the happieſt years of his life. It was then agreed, that he ſhould go and proſecute his medical ſtudies at Edinburgh and London, and afterwards return to ſettle at Hamilton in partnerſhip with Dr Cullen. He accordingly ſet out for Edinburgh in November 1740; and continued there till the following ſpring, attending the lectures of the medical profeſſors, and amongſt others thoſe of the late Dr Alexander Monro, who many years afterwards, in alluſion to this circumſtance, ſtyled himſelf his *old maſter*.

Mr Hunter arrived in London in the ſummer of 1741, and took up his reſidence at Mr, afterwards Dr Smellie's, who was at that time an apothecary in Pall Mall. He brought with him a letter of recommendation to his countryman Dr James Douglas, from Mr Foulis printer at Glaſgow, who had been uſeful to the Doctor in collecting for him different editions of Horace. Dr Douglas was then intent on a great anatomical work on the bones, which he did not live to complete, and was looking out for a young man of abilities and induſtry whom he might employ as a diſſector. This induced him to pay particular attention to Mr Hunter ; and finding him acute and ſenſible, he deſired him to make him another viſit. A ſecond converſation confirmed the doctor in the good opinion he had formed of Mr Hunter ; and without any farther heſitation he invited him into his family to aſſiſt in his diſſections and to ſuperintend the education of his ſon.—Mr Hunter having accepted Dr Douglas's invitation, was by his friendly aſſiſtance enabled to enter himſelf as a ſurgeon's pupil at St George's Hoſpital under Mr James Wilkie, and as a diſſecting pupil under Dr Frank Nichols who at that time taught anatomy with conſiderable reputation. He likewiſe attended a courſe of lectures on experimental philoſophy by Dr Deſaguliers. Of theſe means of improvement he did not fail to make a proper uſe. He ſoon became expert in diſſection, and Dr Douglas was at the expence of having ſeveral of his preparations engraved. But before many months had elapſed, he had the misfortune to loſe this excellent friend.—The death of Dr Douglas, however, made no change in the ſituation of our author. He continued to reſide with the Doctor's family, and to purſue his ſtudies with the ſame diligence as before.

In 1743 he communicated to the Royal Society an eſſay on the Structure and Diſeaſes of articulating Cartilages. This ingenious paper, on a ſubject which till then had not been ſufficiently inveſtigated, affords a ſtriking teſtimony of the rapid progreſs he had made in his anatomical inquiries. As he had it in contemplation to teach anatomy, his attention was directed principally to this object ; and it deſerves to be mentioned as an additional mark of his prudence, that he did not precipitately engage in this attempt, but paſſed ſeveral years in acquiring ſuch a degree of knowledge and ſuch a collection of preparations, as might inſure him ſucceſs. Dr Nichols, to whom he communicated his ſcheme, and who declined giving lectures about that time in favour of the late Dr Lawrence, did not give him much encouragement to proſecute it. But at length an opportunity preſented itſelf for the diſplay of his abilities as a teacher. A ſociety of navy ſurgeons had an apartment in Covent Garden, where they engaged the late Mr Samuel Sharpe to deliver a courſe of lectures on the operations of ſurgery. Mr Sharpe continued to repeat this courſe, till finding that it interfered too much with his other engagements, he declined the taſk in favour of Mr Hunter; who gave the ſociety ſo much ſatisfaction, that they requeſted him to extend his plan to anatomy, and at firſt he had the uſe of their room for his lectures. This happened in the winter of 1746. He is ſaid to have experienced much ſolicitude when he began to ſpeak in public: but the applauſe he met with ſoon inſpired him with courage; and by degrees he became ſo fond of teaching, that for many years before his death he was never happier than when employed in delivering a lecture. The profits of his two firſt courſes were conſiderable; but by contributing to the wants of different friends, he found himſelf at the return of the next ſeaſon obliged to defer his lectures for a fortnight, merely becauſe he had not money enough to defray the neceſſary expence of advertiſements.

In 1747, he was admitted a member of the corporation of ſurgeons; and in the ſpring of the following year, ſoon after the cloſe of his lectures, he ſet out in company with his pupil, Mr James Douglas, on a tour through Holland to Paris. His lectures ſuffered no interruption by his journey, as he returned to England ſoon enough to prepare for his winter-courſe, which began about the uſual time.

At firſt he practiſed both ſurgery and midwifery; but to the former of theſe he had always an averſion. His patron, Dr James Douglas, had acquired conſiderable reputation in midwifery; and this probably induced Mr Hunter to direct his views chiefly to the ſame line of practice. His being elected one of the ſurgeon men-midwives, firſt to the Middleſex, and ſoon afterwards to the Britiſh Lying-in Hoſpital, aſſiſted in bringing him forward in this branch of his profeſſion, in which he was recommended by ſeveral of the moſt eminent ſurgeons of that time, who reſpected his anatomical talents and wiſhed to encourage him. But theſe were not the only circumſtances that contributed to his ſucceſs. He owed much to his abilities, and much to his perſon and manner, which eminently qualified him for the practice of midwifery.

In 1750, he ſeems to have entirely relinquiſhed his views of ſurgery; as in that year he obtained the degree of Doctor of Phyſic from the univerſity of Glaſgow, and began to practiſe as a phyſician. About this time he quitted the family of Mrs Douglas, and went to reſide in Jermyn-ſtreet. In the ſummer of 1751 he reviſited his native country, for which he always retained a cordial affection. His mother was ſtill living at Long Calderwood, which was now become his property by the death of his brother James. Dr Cullen, for whom he always entertained a ſincere regard, was then eſtabliſhed at Glaſgow, and had acquired conſiderable reputation both as a practitioner and teacher of phyſic; ſo that the two friends had the pleaſure of being able to congratulate each other on their mutual proſperity. During this viſit he ſhowed his attachment to his little paternal inheritance, by giving many inſtructions for repairing and improving it, and for purchaſing any adjoining lands that might be offered for ſale. After this journey to Scotland, to which he devoted only a few weeks, he was never abſent from London, unleſs his profeſſional engagements, as ſometimes happened, required his attendance at a diſtance from the capital.

In 1755, on the reſignation of Dr Layard, one of the phyſicians of the Britiſh lying-in hoſpital, we find the governors of that inſtitution voting their "thanks to Dr Hunter for the ſervices he had done the hoſpital, and for his continuing in it as one of the phyſicians:" ſo that he ſeems to have been eſtabliſhed in this office without the uſual form of an election. The year following he was admitted a licentiate of the Royal College of phyſicians. Soon afterwards he was elected a member of the Medical Society; and to the *Obſervations and Inquiries* publiſhed by that ſociety, he at different periods contributed ſeveral valuable papers.

In 1762, we find him warmly engaged in controverſy, ſupporting his claim to different anatomical diſcoveries, in a work entitled Medical Commentaries, the ſtyle of which is correct and ſpirited. As an excuſe for the tardineſs with which he brought forth this work, he obſerves in his introduction, that it required a good deal of time, and he had little to ſpare; that the ſubject was unpleaſant, and therefore he was very ſeldom in the humour to take it up. In this publication he confined himſelf chiefly to a diſpute with the preſent learned profeſſor of anatomy at Edinburgh, concerning injections of the teſticle, the ducts of the lacrymal gland, the origin and uſe of the lymphatic veſſels, and abſorption by veins. He likewiſe defended himſelf againſt a reproach thrown upon him by profeſſor Monro ſenior, by giving a conciſe account of a controverſy he was involved in with Mr Pott concerning the diſcovery of the Hernia Congenita. It was not long before Mr Pott took occaſion to give the public his account of the diſpute; and, in reply, Dr Hunter added a ſupplement to his commentaries. No man was ever more tenacious than Dr Hunter of what he conceived to be his anatomical rights. This was particularly evinced in the year 1780, when his brother communicated to the Royal Society a diſcovery he had made 25 years before, relative to the ſtructure of the placenta, the communication between it and the uterus, and the vaſcularity of the ſpongy chorion. At the next meeting of the ſociety, a letter was read, in which Dr Hunter put in his claim to the diſcovery in queſtion. This letter was followed by a reply from Mr John Hunter, and here the diſpute ended.

In 1762, when the queen became pregnant, Dr Hunter was conſulted: and two years afterwards he had the honour to be appointed phyſician extraordinary to her majeſty.

About this time his avocations were ſo numerous, that he became deſirous of leſſening his fatigue; and having noticed the ingenuity and aſſiduous application of the late Mr William Hewſon, F. R. S. who was then one of his pupils, he engaged him firſt as an aſſiſtant, and afterwards as a partner, in his lectures. This connection continued till the year 1770; when ſome diſputes happened, which terminated in a ſeparation. Mr Hewſon was ſucceeded in the partnerſhip by Mr Cruikſhank, whoſe anatomical abilities are deſervedly reſpected.

In 1767, Dr Hunter was elected a fellow of the Royal Society: and in the year following communicated to that learned body obſervations on the bones, commonly ſuppoſed to be elephants bones, which have been found near the river Ohio in America. This was not the only ſubject of natural hiſtory on which our author employed his pen; for in a ſubſequent volume of the Philoſophical Tranſactions, we find him offering his remarks on ſome bones found in the rock of Gibraltar, and which he proves to have belonged to ſome quadruped. In the ſame work, likewiſe, he publiſhed an account of the nyl-ghau, an Indian animal not deſcribed before. In 1768, Dr Hunter became a fellow of the Society of Antiquaries; and the ſame year at the inſtitution of a Royal Academy of Arts, he was appointed by his majeſty to the office of profeſſor of anatomy. This appointment opened a new field for his abilities; and he engaged in it as he did in every other purſuit of his life, with unabating zeal. He now adapted his anatomical knowledge to the objects of painting and ſculpture, and the novelty and juſtneſs of his obſervations proved at once the readineſs and extent of his genius. In January 1781, he was unanimouſly elected to ſucceed the late Dr John Fothergill as preſident of the Medical Society. As his name and talents were known and reſpected in every part of Europe, ſo the honours conferred on him were not limited to his own country. In 1780 the Royal Medical Society at Paris elected him one of their foreign aſſociates; and in 1782, he received a ſimilar mark of diſtinction from the Royal Academy of Sciences in that city.

The moſt ſplendid of Dr Hunter's medical publications was the Anatomy of the Human Gravid Uterus. The appearance of this work, which had been begun ſo early as the year 1751 (at which time 10 of the 34 plates it contains were completed), was retarded till the year 1775, only by the author's deſire of ſending it into the world with fewer imperfections. This great work is dedicated to the king. In his preface to it, we find the author very candidly acknowledging, that in moſt of the diſſections he had been aſſiſted by his brother Mr John Hunter, "whoſe accuracy (he adds) in anatomical reſearches is ſo well known that to omit this opportunity of thanking him for that aſſiſtance would be in ſome meaſure to diſregard the future reputation of the work itſelf." He likewiſe confeſſes his obligations to the ingenious artiſts who made the drawings and engravings; "but particularly to Mr Strange, not only for having by his hand ſecured a ſort of immortality to two of the plates, but for having given his advice and aſſiſtance in every part with a ſteady and diſintereſted friendſhip. An anatomical deſcription of the gravid uterus was a work which Dr Hunter had in contemplation to give the public. He had likewiſe long been employed in collecting and arranging materials for a hiſtory of the various concretions that are formed in the human body. Amongſt Dr Hunter's papers have been found two introductory lectures, which are written out ſo fairly, and with ſuch accuracy, that he probably intended no farther correction of them before they ſhould be given to the world. In theſe lectures Dr Hunter traces the hiſtory of anatomy from the earlieſt to the preſent times, along with the general progreſs of ſcience and the arts. He conſiders the great utility of anatomy in the practice of phyſic and ſurgery; gives the ancient diviſions of the different ſubſtances compoſing the human body, which for a long time prevailed in anatomy; points out the moſt advantageous mode of cultivating this branch of natural knowledge; and concludes with explaining the particular plan of his own lectures. Beſides theſe manuſcripts, he has alſo left behind him a conſiderable number of caſes of diſſection; moſtly relating to pregnant women.

The ſame year in which the Tables of the Gravid Uterus made their appearance, Dr Hunter communicated to the Royal Society an Eſſay on the Origin of the Venereal Diſeaſe. In this paper he attempted to prove, that this dreadful malady was not brought from America to Europe by the crew of Columbus, as had been commonly ſuppoſed; although it made its firſt appearance about that period. After this paper had been read to the Royal Society, Dr Hunter, in a converſation with the late Dr Muſgrave, was convinced that the teſtimony on which he placed his chief dependence was of leſs weight than he had at firſt imagined, as many of Martyr's letters afford the moſt convincing proofs of their having been written a conſiderable time after the period of their dates. He therefore very properly laid aſide his intention of giving his eſſay to the public. In the year 1777 Dr Hunter joined with Mr Watſon in preſenting to the Royal Society a ſhort account of the late Dr Maty's illneſs, and of the appearances on diſſection; and the year following he publiſhed his Reflections, on the Section of the Symphyſis Pubis.

We muſt now go back a little into the order of time to deſcribe the origin and progreſs of Dr Hunter's muſeum, without ſome account of which the hiſtory of his life would be very incomplete.

When he began to practiſe midwifery, he was deſirous of acquiring a fortune ſufficient to place him in eaſy and independant circumſtances. Before many years had elapſed, he found himſelf in poſſeſſion of a ſum adequate to his wiſhes in this reſpect; and this he ſet apart as a reſource of which he might avail himſelf whenever age or infirmities ſhould oblige him to retire from buſineſs. After he had obtained this competency, as his wealth continued to accumulate, he formed a laudable deſign of engaging in ſome ſcheme of public utility, and at firſt had it in contemplation to found an anatomical ſchool in Edinburgh. For this purpoſe, about the year 1765, during the adminiſtration of Mr Grenville, he preſented a memorial to that miniſter, in which he requeſted the grant of a piece of ground in the Mews, for the ſcite of an anatomical theatre. Dr Hunter undertook to expend L. 7000 on the building, and to endow a profeſſorſhip of anatomy in perpetuity. This ſcheme did not meet with the reception it deſerved. In a converſation on this ſubject ſoon afterwards with the earl of Shelburne, his lordſhip expreſſed a wiſh that the plan might be carried into execution by ſubſcription, and very generouſly requeſted to have his name ſet down for a thouſand guineas. Dr Hunter's delicacy would not allow him to adopt this propoſal. He choſe rather to execute it at his own expence; and accordingly purchaſed a ſpot of ground in Great Windmill-ſtreet, where he erected a ſpacious houſe, to which he removed from Jermyn-ſtreet in 1770. In this building, beſides a handſome amphitheatre, and other convenient apartments for his lectures and diſſections, there was one magnificent room, fitted up with great elegance and propriety as a muſeum. Of the magnitude and value of his anatomical collection ſome idea

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may be formed, when we conſider the great length of years he employed in the making of anatomical preparations and in the diſſection of morbid bodies, added to the eagerneſs with which he procured additions from the collections of Sandys, Hewſon, Falconer, Blackall, and others, that were at different times offered for ſale in the metropolis. His ſpecimens of rare diſeaſes were likewiſe frequently increaſed by preſents from his medical friends and pupils; who, when any thing of this ſort occurred to them, very juſtly thought they could not diſpoſe of it more properly than by placing it in Dr Hunter's muſeum. Speaking of an acquiſition in this way in one of his publications, he ſays, "I look upon every thing of this kind which is given to me, as a preſent to the public; and conſider myſelf as thereby called upon to ſerve the public with more diligence."

Before his removal to Windmill-ſtreet, he had confined his collection chiefly to ſpecimens of human and comparative anatomy and of diſeaſes; but now he extended his views to foſſils, and likewiſe to the promotion of polite literature and erudition. In a ſhort ſpace of time he became poſſeſſed of "the moſt magnificent treaſure of Greek and Latin books that has been accumulated by any perſon now living ſince the days of Mead." A cabinet of ancient medals contributed likewiſe much to the richneſs of his muſeum. A deſcription of part of the coins in this collection, ſtruck by the Greek free cities, has lately been publiſhed by the Doctor's learned friend Mr Combe. In a claſſical dedication of this elegant volume to the queen, Dr Hunter acknowledges his obligations to her majeſty. In the preface ſome account is given of the progreſs of the collection, which has been brought together ſince the year 1770, with ſingular taſte, and at the expence of upwards of L. 20,000. In 1781, the muſeum received a valuable addition of ſhells, corals, and other curious ſubjects of natural hiſtory, which had been collected by the late worthy Dr Fothergill, who gave directions by his will, that his collection ſhould be appraiſed after his death, and that Dr Hunter ſhould have the refuſal of it at L. 500 under the valuation. This was accordingly done, and Dr Hunter purchaſed it for the ſum of L. 1200. The fame of this muſeum ſpread throughout Europe. Few foreigners diſtinguiſhed for their rank or learning viſited the metropolis without requeſting to ſee it. Men of ſcience in Britain always had eaſy acceſs to it.—Conſidered in a collective point of view, it is perhaps without a rival.

Dr Hunter, at the head of his profeſſion, honoured with the eſteem of his ſovereign, and in poſſeſſion of every thing that his reputation and wealth could confer, ſeemed now to have attained the ſummit of his wiſhes. But theſe ſources of gratification were imbittered by a diſpoſition to the gout, which haraſſed him frequently during the latter part of his life, notwithſtanding his very abſtemious manner of living. On Saturday the 15th of March 1783, after having for ſeveral days experienced a return of a wandering gout, he complained of a great head-ach and nauſea. In this ſtate he went to bed, and for ſeveral days felt more pain than uſual both in his ſtomach and limbs. On the Thurſday following he found himſelf ſo much recovered, that he determined to give the introductory lecture to the operations of ſurgery. It was to no purpoſe that his friends urged to him the impropriety of ſuch an attempt. He was determined to make the experiment, and accordingly delivered the lecture; but towards the concluſion his ſtrength was ſo exhauſted that he fainted away, and was obliged to be carried to bed by two ſervants. The following night and day his ſymptoms were ſuch as indicated danger; and on Saturday morning Mr Combe, who made him an early viſit, was alarmed on being told by Dr Hunter himſelf that during the night he had certainly had a paralytic ſtroke. As neither his ſpeech nor his pulſe were affected, and he was able to raiſe himſelf in bed, Mr Combe encouraged him to hope that he was miſtaken. But the event proved the doctor's idea of his complaint to be but too well founded; for from that time till his death, which happened on Sunday the 30th of March, he voided no urine without the aſſiſtance of the catheter, which was occaſionally introduced by his brother: and purgative medicines were adminiſtered repeatedly without procuring a paſſage by ſtool. Theſe circumſtances, and the abſence of pain, ſeemed to ſhow that the inteſtines and urinary bladder had loſt their ſenſibility and power of contraction: and it was reaſonable to preſume that a partial palſy had affected the nerves diſtributed to thoſe parts.

By his will, the uſe of his muſeum, under the direction of truſtees, devolves to his nephew Matthew Baillie. B. A. and in caſe of his death to Mr Cruikſhank for the term of thirty years, at the end of which period the whole collection is bequeathed to the univerſity of Glaſgow. The ſum of eight thouſand pounds ſterling is left as a fund for the ſupport and augmentation of the collection.

Dr Hunter was regularly ſhaped, but of a ſlender make, and rather below a middle ſtature. His manner of living was extremely ſimple and frugal, and the quantity of his food was ſmall as well as plain. He was an early riſer; and when buſineſs was over, was conſtantly engaged in his anatomical purſuits, or in his muſeum. There was ſomething very engaging in his manner and addreſs: and he had ſuch an appearance of attention to his patients, when he was making his inquiries, as could hardly fail to conciliate their confidence and eſteem. In conſultation with his medical brethren, he delivered his opinions with diffidence and candour. In familiar converſation he was cheerful and unaſſuming. As a teacher of anatomy he has been long and deſervedly celebrated. He was a good orator; and having a clear and accurate conception of what he taught, he knew how to place in diſtinct and intelligible points of view the moſt abſtruſe ſubjects of anatomy and phyſiology. Among other methods of explaining and illuſtrating his doctrines, he uſed frequently to introduce ſome appoſite ſtory or caſe that had occurred to him in practice; and few men had acquired a more intereſting fund of anecdotes of this kind, or related them in a more agreeable manner.

HUNTING, the exerciſe or diverſion of purſuing four-footed beaſts of game. See the article GAME.

Four-footed beaſts are hunted in the fields, woods, and thickets, and that both with guns and grehounds.

Birds, on the contrary, are either ſhot in the air, or taken with nets and other devices, which exerciſe is called *fowling;* or they are purſued and taken by birds of prey, which is called *hawking*. See the articles Fowling, Hawking, Falconry, Shooting, *Bird-Catching*, and Decoy.

F. de Launay, profeſſor of the French laws, has an expreſs treatiſe of hunting. From thoſe words of God to Adam, Gen. i. 26, and 28. and to Noah, Gen. ix. 2, 3. hunting was conſidered as a right devolved or made over to man; and the following ages appear to have been of the ſame ſentiment. Accordingly we find, that among the more civilized nations it made one of their diverſions; and as to the wilder and more barbarous, it ſerved them with food and neceſſaries. The Roman juriſprudence, which was formed on the manners of the firſt ages, made a law of it, and eſtabliſhed it as a maxim, that as the natural right of things which have no maſter belongs to the firſt poſſeſſor, wild beaſts, birds, and fiſhes, are the property of whoſoever can take them firſt.

But the northern nations of barbarians who over-ran the Roman empire, bringing with them a ſtronger taſte for the diverſion, and the people being now poſſeſſed of other and more eaſy means of ſubſiſtence from the lands and poſſeſſions of thoſe they had vanquiſhed, their chiefs and leaders began to appropriate the right of hunting, and, inſtead of a natural right, to make it a royal one. Thus it continues to this day; the right of hunting, in Britain, belonging only to the king, and thoſe who derive it from him.

The hunting uſed by the ancients was much like that now practiſed for the rein-deer: which is ſeldom hunted at force, or with hounds; but only drawn with a blood-hound, and foreſtalled with nets and engines. Thus did they with all beaſts; whence a dog is never commended by them for opening before he has diſcovered where the beaſt lies. Hence, they were not in any manner curious as to the muſic of their hounds, or the compoſition of their kennel or pack either for deepneſs, loudneſs, or ſweetneſs of cry, which is a principal point in the hunting of our days. Their huntſmen, indeed, were accuſtomed to ſhout and make a great noiſe as Virgil obſerves in the third of his Georgics: *Ingentum clamore premes ad retia cervum.* But that confuſion was only to bring the deer to the nets laid for him.

The Sicilian way of hunting had ſomething in it very extraordinary.—The nobles or gentry being informed which way a herd of deer paſſed, gave notice to one another, and appointed a meeting; every one bringing with him a croſs bow or a long-bow, and a bundle of ſtaves ſhod with iron, the heads bored, with a cord paſſing through them all: thus provided, they came to the herd, and caſting themſelves about in a large ring, ſurrounded the deer.—Then, each taking his ſtand, unbound his faggot, ſet up his ſtake, and tied the end of the cord to that of his next neighbour, at the diſtance of ten feet from one another.—Then taking feathers, died in crimſon, and faſtened on a thread, they tied them to the cord; ſo that with the leaſt breath of wind they would whirl round.—Which done, the perſons who kept the ſtands withdrew, and hid themſelves in the next covert. Then the chief ranger entering within the line with hounds to draw after the herd, rouſed the game with their cry; which flying towards the line, were turned off, and, ſtill gazing on the ſhaking and ſhining feathers, wandered about as if kept in with a real wall or pale. The ranger ſtill purſued, and calling every perſon by name as he paſſed by their ſtand, commanded him to ſhoot the firſt, third, or ſixth, as he pleaſed: and if any of them miſſed, or ſingled out another than that aſſigned him, it was counted a grievous diſgrace. By ſuch means, as they paſſed by the ſeveral ſtations, the whole herd was killed by the ſeveral hands. *Pier. Hieroglyphic.* lib. vii. cap. 6.

Hunting formed the greateſt part of the employment of the ancient Germans, and probably of the Britons alſo, when they were not engaged in war. We are informed by ſome ancient hiſtorians, that this was the caſe even as late as the third century with the unconquered Britons who lived beyond Adrian's wall; nay, that they ſubſiſted chiefly by the prey they took in this way. The great attachment ſhown by all the Celtic nations to hunting, however, proceeded moſt probably from its being a kind of apprenticeſhip to war. Thus their youth acquired that courage, ſtrength, ſwiftneſs, and dexterity in handling their arms, which made them ſo formidable in time of war to their enemies. Thus alſo they freed the country from many miſchievous animals which abounded in the foreſts, furniſhing themſelves alſo with materials for thoſe feaſts which ſeem to have conſtituted their greateſt pleaſure. The young chieftains had thus likewiſe an opportunity of paying court to their miſtreſſes, by diſplaying their bravery and agility, and making them preſents of their game; nay, ſo ſtrong and univerſal was the paſſion for hunting among the ancient Britons, that young ladies of the higheſt quality and greateſt beauty ſpent much of their time in the chace. They employed much the ſame weapons in hunting that they did in war, viz. long ſpears, javelins, and bows and arrows; having alſo great numbers of dogs to aſſiſt them in finding and purſuing their game. Theſe dogs, we are alſo told, were much admired among other nations, on account of their ſwiftneſs, ſtrength, fierceneſs, and exquiſite ſenſe of ſmelling. They were of ſeveral different kinds, called by different names, and formed a conſiderable article of commerce. They are highly valued by all the Celtic nations, inſomuch that ſome very comical penalties were inflicted upon thoſe who were convicted of ſtealing them (A). From the poems of Oſſian alſo it appears, that the Britons were not unacquainted with the art of catching birds with hawks trained for that purpoſe; but they ſeem to have been abſolutely ignorant of the method of catching fiſh; for there is not a ſingle alluſion to this art in all the works of that venerable bard. Their ignorance of this art is both confirmed and accounted for by Dio Niceus, who aſſures us, that the ancient Britons never taſted fiſh, though they had innumerable multitudes in their ſeas, rivers, and lakes. "By the by (ſays Dr Henry), we

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(A) Si quis canum veltraum aut ſegutium vel petrunculum, præſumſerit involare, jubemus ut convictus, coram omni populo, poſteriora ipſius oſculetur.

may obſerve that this agreement between the poems of Oſſian and the Greek hiſtorian, in a circumſtance ſo ſingular, is at once a proof of the genuine antiquity of theſe poems, and that the Greek and Roman writers were not ſo ill informed about the affairs and manners of the ancient Britons as ſome have imagined."

The Mexicans, whatever imbecility may be imputed to them in other reſpects, were very dexterous in hunting. They uſed bows and arrows, darts, nets, ſnares, and a kind of tubes named *carbottane*, through which they ſhot by blowing out little balls at birds. Thoſe which the kings and great men made uſe of were curiouſly carved and painted, and likewiſe adorned with gold and ſilver. Beſides the exerciſe of the chace which private individuals took either for amuſement or to provide food for themſelves, there were general hunting-matches, ſometimes appointed by the king; at others, undertaken with a view to provide plenty of victims for ſacrifices. A large wood, generally that of Zacatapec, not far diſtant from the capital, was pitched upon as the ſcene of theſe grand hunting-matches. Here they choſe the place beſt adapted for ſetting a great number of ſnares and nets. The wood was incloſed by ſome thouſands of hunters, forming a circle of ſix, ſeven, or eight miles, according to the number of animals they intended to take. Fire was then ſet to the graſs in a great number of places, and a terrible noiſe made with drums, horns, ſhouting, and whiſtling. The hunters gradually contracted their circle, continuing the noiſe till the game were incloſed in a very ſmall ſpace. They were then killed or taken in ſnares, or with the hands of the hunters. The number of animals taken or deſtroyed on theſe occaſions was ſo great, that the firſt Spaniſh viceroy of Mexico would not believe it without making the experiment himſelf. The place choſen for his hunting-match was a great plain in the country of the Otomies, lying between the villages of Xilotepec and S. Giovani del Rio; the Indians being ordered to proceed according to their uſual cuſtoms in the times of their paganiſm. The viceroy, attended by a vaſt retinue of Spaniards, repaired to the place appointed, where accommodations were prepared for them in houſes of wood erected for the purpoſe. A circle of more than 15 miles was formed by 11,000 Otomies, who ſtarted ſuch a quantity of game on the plain, that the viceroy was quite aſtoniſhed, and commanded the greater part of them to be ſet at liberty, which was accordingly done. The number retained, however, was ſtill incredibly great, were it not atteſted by a witneſs of the higheſt credit. On this occaſion upwards of 600 deer and wild goats, 100 cajotes, with a ſurpriſing number of hares, rabbits, and other ſmaller animals. The plain ſtill retains the Spaniſh name *Cazadero*, which ſignifies the "place of the chace."

The Mexicans, beſides the uſual methods of the chace, had particular contrivances for catching certain animals. Thus, to catch young aſſes, they made a ſmall fire in the woods, putting among the burning coals a particular kind of ſtone named *cacalottl* "raven or black ſtone," which burſts with a loud noiſe when heated. The fire was covered with earth, a little maize laid around it. The aſſes quickly aſſembled with their young, in order to feed upon the maize; but while they were thus employed, the ſtone burſt, and ſcared away the old ones by the exploſion, while the young ones, unable to fly, were carried off by the hunters. Serpents were taken even by the hands, ſeizing them intrepidly by the neck with one hand, and ſewing up their mouths with the other. This method is ſtill practiſed. They ſhowed the greateſt dexterity in tracing the ſteps of wild beaſts, even when an European could not have diſcerned the ſmalleſt print of their feet. The Indian method, however, was by obſerving ſometimes the herbs or leaves broken down by their feet; ſometimes the drops of blood which fell from them when wounded. It is ſaid that ſome of the American Indians ſhow ſtill greater dexterity in diſcovering the tracts of their enemies, which to an European would be altogether imperceptible.

Hunting was a favourite diverſion of the great and bloody conqueror Jenghiz Khan, if indeed we can apply the word *diverſion* to a monſter whoſe mind was ſet upon the deſtruction of his own ſpecies, and who only endeavoured to make the murder of brutes ſubſervient to that of men, by keeping his ſoldiers in a kind of warfare with the beaſts when they had no human enemies to contend with. His expeditions were conducted on a plan ſimilar to that of the Mexicans already mentioned; and were no doubt attended with ſtill greater ſucceſs, as his numerous army could incloſe a much greater ſpace than all the Indians whom the Spaniſh viceroy could muſter. The Eaſt Indian princes ſtill ſhow the ſame inclination to the chace; and Mr Blane, who attended the hunting excurſions of Aſoph Ul Dowlah viſir of the Mogul empire and nabob of Oude in 1785 and 1786, gives the following account of the method practiſed on this occaſion.

The time choſen for the hunting party is about the beginning of December; and the diverſion is continued till the heats, which commence about the beginning of March, oblige them to ſtop. During this time a circuit of between 400 and 600 miles is generally made; the hunters bending their courſe towards the ſkirts of the northern mountains, where the country is wild and uncultivated. The viſir takes along with him not only his court and ſeraglio, but a great part of the inhabitants of his capital. His immediate attendants may amount to about 2000; but beſides theſe he is alſo followed by 500 or 600 horſe, and ſeveral battalions of regular ſepoys with their field pieces. Four or five hundred elephants are alſo carried along with him; of which ſome are uſed for riding, others for fighting, and ſome for clearing the jungles and foreſts of the game. About as many ſumpter horſes of the beautiful Perſian and Arabian breeds are carried along with him. A great many wheel carriages drawn by bullocks likewiſe attend, which are uſed chiefly for the convenience of the women; ſometimes alſo he has an Engliſh chaiſe or two, and ſometimes a chariot; but all theſe as well as the horſes are merely for ſhow, the viſir himſelf never uſing any other conveyance than an elephant, or ſometimes when fatigued or indiſpoſed a palanquin. The animals uſed in the ſport are principally gre-hounds, of which there may be about 300; he has alſo about 200 hawks, and a few trained leopards for hunting deer. There are a great number of markſmen, whoſe profeſſion it is too ſhoot deer; with many fowlers, who provide game; as none of the natives of India know how to ſhoot game with ſmall ſhot, or to hunt with ſlow hounds. A vaſt number of matchlocks are carried along with the company with many Engliſh pieces of various kinds, 40 or 50 pairs of piſtols, bows and arrows, beſides ſwords, daggers, and ſabres without number. There are alſo nets of various kinds, ſome for quail, and others very large, for fiſhing, which are carried along with him upon elephants, attended by fiſhermen, ſo as always to be ready for throwing into any river or lake that may be met with. Every article that can contribute to luxury or pleaſure is likewiſe carried along with the army. A great many carts are loaded with the Ganges water, and even ice is tranſported for cooling the drink. The fruits of the ſeaſon and freſh vegetables are daily ſent to him from his gardens by bearers ſtationed at the diſtance of every ten miles; by which means each article is conveyed day or night at the rate of four miles an hour. Beſides the animals already mentioned, there are alſo fighting antelopes, buffaloes, and rams in great numbers; alſo ſeveral hundred pigeons, ſome fighting cocks, with a vaſt variety of parrots, nightingales, &c.

To complete the magnificence or extravagance of this expedition, there is always a large bazar, or moving town which attends the camp; conſiſting of ſhopkeepers, and artificers of all kinds, money-changers, dancing-women; ſo that, on the moſt moderate calculation, the whole number of people in his camp cannot be computed at fewer than 20,000. The nabob himſelf, and all the gentlemen of his camp, are provided with double ſets of tents and equipage, which are always ſent on the day before to the place to which he intends to go; and this is generally eight or ten miles in whatever direction moſt game is expected; ſo that by the time he has finiſhed his ſport in the morning, he finds his whole camp ready pitched for his reception.

The nabob, with the attending gentlemen, proceed in a regular moving court or durbar, and thus they keep converſing together and looking out for game. A great many foxes, hares, jackals, and ſometimes deer, are picked up by the dogs as they paſs along: the hawks are carried immediately before the elephants, and let fly at whatever game is ſprung for them, which is generally partridges, buſtards, quails, and different kinds of herons, theſe laſt affording excellent ſport with the falcons or ſharp-winged hawks. Wild boars are ſometimes ſtarted, and either ſhot or run down by the dogs and horſemen. Hunting the tyger, however, is looked upon as the principal diverſion, and the diſcovery of one of theſe animals is accounted a matter of great joy. The cover in which the tyger is found is commonly long graſs, or reed, of ſuch an height as frequently to reach above the elephants; and it is difficult to find him in ſuch a place, as he commonly endeavours either to ſteal off, or lies ſo cloſe to the ground that he cannot be rouſed till the elephants are almoſt upon him. He then roars and ſkulks away, but is ſhot at as ſoon as he can be ſeen: it being generally contrived that the nabob ſhall have the compliment of firing firſt. If he be not diſabled, the tyger continues to ſkulk along, followed by the line of elephants; the nabob and others ſhooting at him as often as he can be ſeen till he falls. The elephants themſelves are very much afraid of this terrible animal, and diſcover their apprehenſions by ſhrieking and roaring as ſoon as they begin to ſmell him and hear him growl; generally attempting to turn away from the place where he is. When the tyger can be traced to a particular ſpot, the elephants are diſpoſed of in a circle round him; in which caſe he will at laſt make a deſperate attack, ſpringing upon the elephant that is neareſt, and attempting to tear him with his teeth or his claws. Some, but very few, of the elephants can be brought to attack the tyger; and this they do by curling up their trunks under their mouths, and then attempting to toſs, or otherwiſe deſtroy him with their tuſks, or to cruſh him with their feet or knees. It is conſidered as good ſport to kill one tyger in a day; though ſometimes, when a female is met with her young ones, two or three will be killed.

The other objects of purſuit in theſe excurſions are wild elephants, buffaloes, rhinoceroſes. Our author was preſent at the hunting of a wild elephant of vaſt ſize and ſtrength. An attempt was made to take him alive by ſurrounding him with tame elephants while he was kept at bay by crackers and other fireworks; but he conſtantly eluded every effort of this kind. Sometimes the drivers of the tame elephants, got ſo near him, that they threw ſtrong ropes over his head, and endeavoured to detain him by faſtening them around trees; but he conſtantly ſnapped the ropes like pack-threads, and purſued his way to the foreſt. Some of the ſtrongeſt and moſt furious of the fighting elephants were then brought up to engage him; but he attacked them with ſuch fury that they were all obliged to deſiſt. In his ſtruggle with one of them he broke one of his tuſks, and the broken piece, which was upwards of two inches in diameter, of ſolid ivory, flew up into the air ſeveral yards above their heads. Orders were now given to ~~kill him~~, as it appeared impoſſible to take him alive; but even this was not accompliſhed without the greateſt difficulty. He twice turned and attacked the party who purſued him; and in one of theſe attacks ſtruck the elephant obliquely on which the prince rode, threw him upon his ſide, but then paſſed on without offering farther injury. At laſt he fell dead, after having received as was ſuppoſed upwards of 1000 balls into his body.

Notwithſtanding the general paſſion amongſt moſt nations for hunting, however, it has by many been deemed an exerciſe inconſiſtent with the principles of humanity. The late king of Pruſſia expreſſed himſelf on this ſubject in the following manner. "The chace is one of the moſt ſenſual of pleaſures, by which the powers of the body are ſtrongly exerted, but thoſe of the mind are unemployed. It is an exerciſe which makes the limbs ſtrong, active, and pliable; but leaves the head without improvement. It conſiſts in a violent deſire in the purſuit, and the indulgence of a cruel pleaſure in the death of the game. I am convinced, that man is more cruel and ſavage than any beaſt of prey: We exerciſe the dominion given us over theſe our fellow-creatures in the moſt tyrannical manner. If we pretend to any ſuperiority over the beaſts, it ought certainly to conſiſt in reaſon; but we commonly find that the moſt paſſionate lovers of the chace renounce this privilege, and converſe only with their dogs, horſes, and other irrational animals. This renders them wild and unfeeling; and it is probable that they cannot be very merciful to the human ſpecies.

For a man who can in cold blood torture a poor innocent animal, cannot feel much compaſſion for the diſtreſſes of his own ſpecies. And, beſides, can the chace be a proper employment for a thinking mind?"

The arguments uſed by his majeſty againſt hunting ſeem indeed to be much confirmed by conſidering the various nations who have moſt addicted themſelves to it. Theſe, as muſt be ſeen, from what has already been ſaid, were all barbarous; and it is remarkable, that Nimrod, the firſt great hunter of whom we have any account, was likewiſe the firſt who oppreſſed and enſlaved his own ſpecies. As nations advanced in civilization, it always became neceſſary to reſtrain by law the inclination of the people for hunting. This was done by the wiſe legiſlator Solon, leſt the Athenians ſhould neglect the mechanic arts on its account. The Lacedemonians, on the contrary, indulged themſelves in this diverſion without controul; but they were barbarians, and moſt cruelly oppreſſed thoſe whom they had in their power, as is evident from their treatment of the Helots. The like may be ſaid of the Egyptians, Perſians, and Scythians; all of whom delighted in war, and oppreſſed their own ſpecies. The Romans on the other hand, who were ſomewhat more civilized, were leſs addicted to hunting. Even they, however, were exceedingly barbarous, and found it neceſſary to make death and ſlaughter familiar to their citizens from their infancy. Hence their diverſions of the amphitheatre and circus, where the hunting of wild beaſts was ſhown in the moſt magnificent and cruel manner; not to mention their ſtill more cruel ſports of gladiators, &c.

In two caſes only does it ſeem poſſible to reconcile the practice of hunting with humanity: viz. either when an uncultivated country is over-run with noxious animals; or when it is neceſſary to kill wild animals for food. In the former caſe, the noxious animals are killed becauſe they themſelves would do ſo if they were allowed to live; but if we kill even a lion or a tyger merely for the pleaſure of killing him, we are undoubtedly chargeable with cruelty. In like manner, our modern fox-hunters expreſsly kill foxes, not in order to deſtroy the breed of theſe noxious animals, but for the pleaſure of ſeeing them exert all their power and cunning to ſave their lives, and then beholding them torn in pieces after being half dead with fatigue. This refinement in cruelty, it ſeems, is their favourite diverſion; and it is accounted a crime for any perſon to deſtroy theſe animals in ſelf-defence, as appears from the following paſſage in Mr Beckford's treatiſe on hunting. "Beſides the digging of foxes, by which method many young ones are taken and old ones deſtroyed, traps, &c. are too often fatal to them. Farmers for their lambs (which, by the bye, few foxes ever kill), gentlemen for their game, and old women for their poultry, are their inveterate enemies. In the country where I live, moſt of the gentlemen are ſportſmen; and even thoſe who are not, ſhow every kind of attention to thoſe who are. I am ſorry it is otherwiſe with you; and that your old gouty neighbour ſhould deſtroy your foxes, I muſt own concerns me. I know ſome gentlemen, who, when a neighbour had deſtroyed all their foxes, and thereby prevented them from purſuing a favourite amuſement, loaded a cart with ſpaniels, and went altogether and deſtroyed his pheaſants. I think they might have called this very properly *lex talionis*: and it had the deſired effect; for as the gentleman did not think it prudent to fight them all, he took the wiſer method, he made peace with them. He gave an order that no more foxes ſhould be deſtroyed, and they never afterwards killed any of his pheaſants."

In the firſt volume of the Mancheſter Tranſactions we have a diſſertation upon the diverſion of hunting, ſhooting, &c. as compatible with the principles of humanity. One argument uſed by the author is, that death is no poſitive evil to brutes. "It would perhaps (ſays he) be too haſty an aſſertion to affirm, that death is no evil to brutes. We are not competent to determine whether their exiſtence, like our own, may not extend to ſome future mode of being, or whether the preſent limited ſphere is all in which they are intereſted. On ſo ſpeculative a queſtion little can be advanced with preciſion; nor is it neceſſary for the inveſtigation of the ſubject before us. If we may be allowed to reaſon from what we know, it may be ſafely conjectured, that death to brutes is no poſitive evil: we have no reaſon to believe they are endowed with foreſight; and therefore, even admitting that with them the pleaſures of life exceed its pains and cares, in terminating their exiſtence, they only ſuffer a privation of pleaſure."

On this extraordinary piece of reaſoning we may obſerve, that it would hold much more againſt the human ſpecies than againſt the brutes. There are few amongſt us willing to allow that the pleaſures we enjoy are equivalent to our pains and cares; death therefore muſt be to us a relief from pain and miſery, while to the brutes it is a privation of pleaſure. Hence, if it be no poſitive evil for a brute to ſuffer death, to a man it muſt be a poſitive good: add to which, that a man lives in hope of an endleſs and glorious life, while a brute has no ſuch hope; ſo that, if to kill a brute, on our author's principles be no cruelty, to kill a man muſt be an act of tenderneſs and mercy!

Another argument, no leſs inconcluſive, is our author's ſuppoſing that death from diſeaſe is much more to be dreaded in a brute than a violent death. Were brutes naturally in as helpleſs a ſtate as man, no doubt their want of ſupport from ſociety in caſes where they are attacked by ſickneſs, would be very deplorable; but it muſt be conſidered that the parallel betwixt the two ſpecies is in this reſpect by no means fair. A brute has every where its food at hand, and is naturally capable of reſiſting the inclemencies of the weather; but man has not only a natural inability to procure food for himſelf in the way that the brutes do, but is, beſides, very tender and incapable of reſiſting the inclemency of the air. Hence, a man unaſſiſted by ſociety muſt very ſoon periſh; and, no doubt, it would be much more merciful for people to kill one another at once, than to deprive them of the benefits of ſociety, as is too frequently done in various ways needleſs to be mentioned at preſent. A brute, however, has nothing to fear. As long as its ſtomach can receive food, nature offers an abundant ſupply. One that feeds upon graſs has it always within reach; and a carnivorous one will content itſelf with worms or inſects, which, as long as it is able to crawl it can ſtill make a ſhift to provide; but ſo totally helpleſs is man when left to himſelf in a ſtate of weakneſs, that many barbarous nations have looked upon the killing of their old and infirm people to be an act of mercy.

Equally unhapy is our author in his other arguments, that the quick tranſition from a ſtate of perfect health to death mitigates the ſeverity. The tranſition is not quick. The ſportſmen eſtimate their diverſion by the length of the chaſe, and during all that time the creature muſt be under the ſtrongeſt agonies of terror; and what perſon of humanity is there who muſt not feel for an animal in this ſituation? All this is aſſented to by our author, who ſays, "Hard is the heart who does not commiſerate the ſufferer." Is not this an acknowledgement on his part, that before a perſon can become a thorough ſportſman, he muſt harden his heart, and ſtifle thoſe amiable ſenſations of compaſſion, which on all occaſions ought to be encouraged towards every creature, unleſs in caſes of neceſſity. But in the preſent caſe no neceſſity is or can be pretended. If a gentleman chooſes to regale himſelf with veniſon of any kind, he may breed animals for the purpoſe. We call Domitian cruel, becauſe he took pleaſure in catching flies, and ſtabbing them with a bodkin. A butcher is excluded from ſitting on a jury on account of his being accuſtomed to ſights which are deemed inhuman; but whether it is more inhuman to knock down an ox at once with an ax, or to tear him in pieces with dogs (for they would accompliſh the purpoſe if properly trained), muſt be left to the ſportſmen to determine.

Laſtly, the great argument in favour of hunting, that it contributes to the health of the body and exhilaration of the ſpirits, ſeems equally fallacious with the reſt. It cannot be proved that hunters are more healthy or long lived than other people. That exerciſe will contribute to the preſervation of health, as well as to the exhilaration of the mind, is undoubted; but many other kinds of exerciſe will do this as well as hunting. A man may ride from morning to night, and amuſe himſelf with viewing and making remarks on the country through which he paſſes; and ſurely there is no perſon will ſay that this exerciſe will tend to impair his health or ſink his ſpirits. A man may amuſe and exerciſe himſelf not only with pleaſure, but profit alſo, in many different ways, and yet not accuſtom himſelf to behold the death of animals with indifference. It is this that conſtitutes the cruelty of hunting; becauſe we thus wilfully extinguiſh in part that principle naturally implanted in our nature, which if totally eradicated would ſet us not only on a level with the moſt ferocious wild beaſts, but perhaps conſiderably below them; and it muſt always be remembered, that whatever pleaſure terminates in death is cruel, let us uſe as many palliatives as we pleaſe to hide that cruelty from the eyes of others, or even from our own.

The gentlemen and maſters of the ſport have invented a ſet of terms which may be called the *hunting-language*. The principal are thoſe which follow:

1. For beaſts as they are in company.—They ſay, a *herd* of harts, and all manner of deer. A *bey* of roes. A *ſounder* of ſwine. A *rout* of wolves. A *richeſs* of martens. A *brace* or *leaſh* of bucks, foxes, or hares. A *couple* of rabbits or coneys.

2. For their lodging.—A hart is ſaid to *harbour*. A buck *lodges*. A roe *beds*. A hare *ſeats* or *forms*. A coney *ſits*. A fox *kennels*. A marten *trees*. An otter *watches*. A badger *earths*. A boar *couches*.—Hence, to expreſs their diſlodging, they ſay *Unharbour* the hart. *Rouſe* the buck. *Start* the hare. *Bolt* the coney. *Unkennel* the fox. *Untree* the marten. *Vent* the otter. *Dig* the badger. *Rear* the boar.

3. For their noiſe at rutting time.—A hart *belleth*. A buck *growns* or *troats*. A roe *bellows*. A hare *beats* or *taps*. An otter *whines*. A boar *freams*. A fox *barks*. A badger *ſhrieks*. A wolf *howls*. A goat *rattles*.

4. For their copulation.—A hart or buck goes to *rut*. A roe goes to *tourn*. A boar goes to *brim*. A hare or coney goes to *buck*. A fox goes to *clickitting*. A wolf goes to *match* or *make*. An otter *hunteth* for his kind.

5. For the footing and treading.—Of a hart, we ſay the *ſlot*. Of a buck, and all fallow-deer, the *view*. Of all deer, if on the graſs and ſcarce viſible, the *foiling*. Of a fox, the *print*; and of other the like vermin, the *footing*. Of an otter, the *marks*. Of a boar, the *track*. The hare, when in open field, is ſaid to *ſore*: when ſhe winds about to deceive the hounds, ſhe *doubles*; when ſhe beats on the hard highway, and her footing comes to be perceived, ſhe *pricketh*: in ſnow, it is called the *trace* of a hare.

6. The tail of a hart, buck, or other deer is called the *ſingle*. That of a boar, the *wreath*. Of a fox, the *bruſh* or *drag*; and the tip at the end, the *chape*. Of a wolf, the *ſtern*. Of a hare and coney, the *ſcut*.

7. The ordure or excrement of a hart and all deer, is called *fewmets* or *fewmiſhing*. Of a hare, *crotiles*, or *crotiſing*. Of a boar, *leſſes*. Of a fox, the *biliting*; and of other the like vermin, the *fuants*. Of an otter the *ſpraints*.

8. As to the attire of deer, or parts thereof, thoſe of a ſtag, if perfect, are the *bur*, the *pearls*, the little *knobs* on it, the *beam*, the *gutters*, the *antler*, the *ſur-antler*, *royal*, *ſur-royal*, and all at top the *croches*. Of the buck, the *bur*, *beam*, *brow-antler*, *black antler*, *advancer*, *palm*, and *ſpellers*. If the crotches grow in the form of a man's hand, it is called a *palmed head*. Head bearing not above three or four, and the croches placed aloft, all of one height, are called *crowned heads*. Heads having double croches, are called *forked heads*, becauſe the croches are planted on the top of the beam like forks.

9. They ſay, a *litter* of cubs, a *neſt* of rabbits, a ſquirrel's *dray*.

10. The terms uſed in reſpect of the dogs, &c. are as follow.—Of gre-hounds, two make a *brace*; of hounds, a *couple*. Of gre hounds, three make a *leaſh*; of hounds a *couple* and *half*.—They ſay, *let ſlip* a gre-hound, and, *caſt off* a hound. The ſtring wherein a gre-hound is led, is called a *leaſh*; and that of a hound, a *lyome*. The gre-hound has his *collar*, and the hound his *couples*. We ſay a *kennel* of hounds, and a *pack* of beagles.

HUNTING, as practiſed among us is chiefly performed with dogs: of which we have various kinds, accomodated to the different kinds of game, as *hounds*, *gre-hounds*, *blood-hounds*, *terriers*, &c. See CANIS, HOUND, &c.

In the kennels or packs they generally rank them under the heads of *enterers*, *drivers*, *flyers*, *tyers*, &c.

On ſome occaſions, nets, ſpears, and inſtruments for digging the ground, are alſo required; nor is the hunting-horn to be omitted.

The uſual chaſes among us are, the *hart*, *buck*, *roe*, *hare*, *fox*, *badger*, and *otter*.—We ſhall here give ſomething of what relates to each thereof, firſt premiſing an explanation of ſome general terms and phraſes, more immediately uſed in the progreſs of the ſport itſelf; what belongs to the ſeveral ſorts of game in particular being reſerved for the reſpective articles.

When the hounds, then, being caſt off, and finding the ſcent of ſome game, begin to open and cry; they are ſaid to *challenge*. When they are too buſy ere the ſcent be good, they are ſaid to *babble*. When too buſy where the ſcent is good, to *bawl*. When they run it endwiſe orderly, holding in together merrily, and making it good, they are ſaid to be in *full cry*. When they run along without opening at all, it is called *running mute*.

When ſpaniels open in the ſtring, or a gre-hound in the courſe, they are ſaid to *lapſe*.

When beagles cry and bark at their prey, they are ſaid to *yearn*.

When the dogs hit the ſcent the contrary way, they are ſaid to *draw amiſs*.

When they take freſh ſcent, and quit the former chaſe for a new one, it is called *hunting change*.

When they *hunt* the game by the heel or track, they are ſaid to *hunt counter*.

When the chaſe goes off, and returns again, traverſing the ſame ground, it is called *hunting the foil*.

When the dogs run at a whole herd of deer, inſtead of a ſingle one, it is called *running riot*.

Dogs ſet in readineſs where the game is expected to come by, and caſt off after the other hounds are paſſed, are called a *relay*. If they be caſt off ere the other dogs be come up, it is called *vauntlay*.

When, finding where the chaſe has been, they make a proffer to enter, but return, it it is called a *blemiſh*.

A leſſon on the horn to encourage the hounds, is named a *call*, or a *recheat*. That blown at the death of a deer, is called a *mort*. The part belonging to the dogs of any chaſe they have killed, is the *reward*. They ſay, *take off* a deer's ſkin; *ſtrip* or *caſe* a hare, fox, and all ſorts of vermin; which is done by beginning at the ſnout, and turning the ſkin over the ears down to the tail.

HUNTING is practiſed in a different manner, and with different apparatus, according to the nature of the beaſts which are hunted, a deſcription of whom may be found under their reſpective articles, *infra*.

With regard to the ſeaſons, that for hart and buck-hunting begins a fortnight after midſummer, and laſts till Holy-rood day; that for the hind and doe, begins on Holy-rood day, and laſts till Candlemas; that for fox hunting begins at Chriſtmas, and holds till Lady-day; that for roe hunting begins at Michaelmas, and ends at Chriſtmas; hare-hunting commences at Michaelmas, and laſts till the end of February; and where the wolf and boar are hunted, the ſeaſon for each begins at Chriſtmas, the firſt ending at Lady-day, and the latter at the Purification.

When the ſportſmen have provided themſelves with nets, ſpears, and a hunting-horn to hold the dogs together, and likewiſe with inſtruments for digging the ground, the following directions will be of uſe to them in the purſuit of each ſort of game.

Bager-HUNTING. In doing this you muſt ſeek the earths and burrows where he lies, and in a clear moonſhine night go and ſtop all the burrows, except one or two, and therein place ſome ſacks, faſtened with drawing ſtrings, which may ſhut him in as ſoon as he ſtraineth the bag. Some uſe no more than to ſet a hoop in the mouth of the ſack, and ſo put it into the hole; and as ſoon as the badger is in the ſack and ſtraineth it, the ſack ſlippeth off the hoop and follows him to the earth, ſo he lies tumbling therein till he is taken. Theſe ſacks or bags being thus ſet, caſt off the hounds, beating about all the woods, coppices, hedges, and tufts round about, for the compaſs, of a mile or two; and what badgers are abroad, being alarmed by the hounds, will ſoon betake themſelves to their burrows; and, obſerve that he who is placed to watch the ſacks, muſt ſtand cloſe and upon a clear wind; otherwiſe the badger will diſcover him and will immediately fly ſome other way into his burrow. But if the hounds can encounter him, before he can take his ſanctuary, he will then ſtand at bay like a boar, and make good ſport, grievouſly biting and clawing the dogs, for the manner of their fighting is lying on their backs, uſing both teeth and nails; and by blowing up their ſkins defend themſelves againſt all bites of the dogs, and blows of the men upon their noſes. And for the better preſervation of your dogs, it is good to put broad collars about their necks made of grey ſkins.

When the badger perceives his terriers to begin to yearn him in his burrow, he will ſtop the hole betwixt him and the terriers, and if they ſtill continue baying he will remove his couch into another chamber or part of the burrow, and ſo from one to another, barricading the way before them, as they retreat until they can go no farther. If you intend to dig the badger out of his burrow, you muſt be provided with the ſame tools as for digging out a fox; and beſides, you ſhould have a pail of water to refreſh the terriers, when they come out of the earth to take breath and cool themſelves. It will alſo be neceſſary to put collars of bells upon the necks of your terriers, which making a noiſe may cauſe the badger to bolt out. The tools uſed for digging out the badger, being troubleſome to be carried on mens backs, may be brought in a cart. In digging, you muſt conſider the ſituation of the ground, by which you may judge where the chief angles are; for elſe, inſtead of advancing the work, you will hinder it. In this order you may beſiege them in their holds, or caſtles; and may break their platforms parapets, caſements, and work to them with mines and countermines until you have overcome them.

Having taken a live and luſty badger, if you would make ſport, carry him home in a ſack and turn him out in your court-yard, or ſome other incloſed place, and there let him be hunted and worried to death by your hounds.

There are the following profits and advantages which accrue by killing this animal. Their fleſh, blood, and greaſe, though they are not good food, yet are very uſeful for phyſicians and apothecaries for oils, ointments, ſalves, and powders for ſhortneſs of breath, the cough of the lungs, for the ſtone, ſprained ſinews, colt-aches, &c. and the ſkin being well dreſſed, is very warm and good for old people who are troubled with paralytic diſtempers.

Boar-Hunting. See Boar

Buck-Hunting. Here the ſame hounds and methods are uſed as in running the ſtag; and, indeed, he that can hunt a hart or ſtag well, will not hunt a buck ill.

In order to facilitate the chace, the game-keeper commonly ſelects a fat buck out of the herd, which he ſhoots in order to maim him, and then he is run down by the hounds.

As to the method of hunting the buck. The company generally go out very early for the benefit of the morning. Sometimes they have a deer ready lodged; if not, the coverts are drawn till one is rouſed: or ſometimes in a park a deer is pitched upon, and forced from the herd, then more hounds are laid on to run the chace. If you come to be at a fault, the old ſtaunch hounds are only to be relied upon till you recover him again: if he be ſunk, and the hounds thruſt him up, it is called an *imprime,* and the company all ſound a recheat; when he is run down, every one ſtrives to get in to prevent his being torn by the hounds, fallow-deer ſeldom or never ſtanding at bay.

He that firſt gets in, cries hoo-up, to give notice that he is down, and blows a death. When the company are all come in, they paunch him, and reward the hounds; and generally the chief perſon of quality amongſt them *takes ſay,* that is, cuts his belly open, to ſee how fat he is. When this is done, every one has a chop at his neck; and the head being cut off, is ſhewed to the hounds, to encourage them to run only at male deer, which they ſee by the horns, and to teach them to bite only at the head: then the company all ſtanding in a ring, one blows a ſingle death; which being done, all blow a double recheat, and ſo conclude the chace with a general halloo of hoo-up, and depart the field to their ſeveral homes, or to the place of meeting; and the huntſman, or ſome other, hath the deer caſt croſs the buttocks of his horſe, and ſo carries him home.

Fox-Hunting makes a very pleaſant exerciſe, and is either above or below ground.

1. *Above-ground.* To hunt a fox with hounds, you muſt draw about groves, thickets, and buſhes near villages. When you find one, it will be neceſſary to ſtop up his earth the night before you deſign to hunt, and that about midnight; at which time he is gone out to prey: this may be done by laying two white ſticks acroſs in his way, which he will imagine to be ſome gin or trap laid for him; or elſe they may be ſtopped up with black thorns and earth mixed together.

Mr Beckford is of opinion that for fox-hunting the pack ſhould conſiſt of 25 couple. The hour moſt favourable for the diverſion is an early one; and he thinks that the hounds ſhould be at the cover at ſun-riſing. The huntſman ſhould then throw in his hounds as quietly as he can, and let the two whippers-in keep wide of him on either hand; ſo that a ſingle hound may not eſcape them; let them be attentive to his halloo, and let the ſportſman be ready to encourage or rate as that directs. The fox ought on no account to be hallooed too ſoon, as in that caſe he would moſt certainly turn back again, and ſpoil all the ſport.— Two things our author particularly recommends, viz. the making all the hounds ſteady, and making them all draw. “Many huntſmen (ſays he) are fond of having them at their horſe's heels; but they never can get ſo well or ſo ſoon together as when they ſpread the cover; beſides, I have often known, when there have been only a few finders, that they have found their fox gone down the wind, and been heard of no more that day. Much depends upon the firſt finding of your fox; for I look upon a fox well found to be half killed. I think people are generally in too great a hurry on this occaſion. There are but few inſtances where ſportſmen are not too noiſy, and too fond of encouraging their hounds, which ſeldom do their buſineſs ſo well as when little is ſaid to them. The huntſman ought certainly to begin with his foremoſt hounds; and I ſhould wiſh him to keep as cloſe to them as he conveniently can; nor can any harm ariſe from it, unleſs he ſhould not have common ſenſe. No hounds can then ſlip down the wind and get out of his hearing; he will alſo ſee how far they carry the ſcent, a neceſſary requiſite; for without it he never can make a caſt with any certainty.—You will find it not leſs neceſſary for your huntſman to be active in preſſing his hounds forward when the ſcent is good, than to be prudent in not hurrying them beyond it when it is bad. It is his buſineſs to be ready at all times to lend them that aſſiſtance which they ſo frequently need, and which when they are firſt at a fault is then moſt critical. A fox-hound at that time will exert himſelf moſt; he afterwards cools and becomes more indifferent about his game. Thoſe huntſmen who do not get forward enough to take advantage of this eagerneſs and impetuoſity, and direct it properly, ſeldom know enough of hunting to be of much uſe to them afterwards. Though a huntſman cannot be too fond of hunting, a whipper-in eaſily may. His buſineſs will ſeldom allow him to be forward enough with the hounds to ſee much of the ſport. His only thought therefore ſhould be to keep the hounds together, and to contribute as much as he can to the killing of the fox: keeping the hounds together is the ſureſt means to make them ſteady. When left to themſelves they ſeldom refuſe any blood they can get; they become conceited; learn to tie upon the ſcent; and beſides this they frequently get a trick of hunting by themſelves, and are ſeldom good for much afterwards.

“Every country is ſoon known; and nine foxes out of ten, with the wind in the ſame quarter, will follow the ſame track. It is eaſy therefore for the whipper-in to cut ſhort, and catch the hounds again. With a high ſcent you cannot puſh on hounds too much. Screams keep the fox forward, at the ſame time that they keep the hounds together, or let in the tail-hounds: they alſo enliven the ſport; and, if diſcreetly uſed, are always of ſervice; but in cover they ſhould be given with the greateſt caution. Halloos ſeldom do any hurt when you are running up the wind, for then none but the tail-hounds can hear you: when you are running down the wind, you ſhould halloo no more than may be neceſſary to bring the tail-hounds forward; for a hound that knows his buſineſs ſeldom wants encouragement when he is upon a ſcent.—Moſt fox-hunters wiſh to ſee their hounds run in a *good ſtyle.* I confeſs I myſelf am one of thoſe; I hate to ſee a ſtring of them; nor can I bear to ſee them creep where they can leap. A pack of harriers, if they have time, may kill a fox, but I defy them to kill him in the ſtyle in which he ought to be killed; they muſt hunt him down. If you intend to tire him out: you muſt expect to be tired alſo yourſelf; I never wiſh a chace to be leſs than one hour, or to exceed two: it is ſufficiently long if properly followed: it will ſeldom be longer unleſs there be a fault ſomewhere; either in the day, the huntſman, or the hounds.

“ Changing from the hunted fox to a freſh one is as bad an accident as can happen to a pack of fox-hounds, and requires all the ingenuity and obſervation that man is capable of to guard againſt it. Could a fox-hound diſtinguiſh a hunted fox as the deer-hound does the deer that is blown, fox-hunting would then be perfect. A huntſman ſhould always liſten to his hounds while they are running in cover; he ſhould be particularly attentive to the headmoſt hounds, and he ſhould be conſtantly on his guard againſt a ſkirter; for if there be two ſcents, he muſt be wrong. Generally ſpeaking, the beſt ſcent is leaſt likely to be that of the hunted fox: and as a fox ſeldom ſuffers hounds to run up to him as long as he is able to prevent it: ſo, nine times out of ten, when foxes are hallooed early in the day, they are all freſh foxes. The hounds moſt likely to be right are the hard running line-hunting ones; or ſuch as the huntſman knows had the lead before there aroſe any doubt of changing. With regard to the fox, if he break over an open country, it is no ſign that he is hard run; for they ſeldom at any time will do that unleſs they are a great way before the hounds. Alſo if they run up the wind;—they ſeldom or never do that when they have been long hunted and grow weak; and when they run their foil, that alſo may direct him. All this requires a good ear and nice obſervation; and indeed in that conſiſts the chief excellence of a huntſman.

“ When the hounds divide and are in two parts, the whipper-in, in ſtopping, muſt attend the huntſman and wait for his halloo, before he attempts to ſtop either: for want of proper management in this reſpect I have known the hounds ſtopped at both places, and both foxes loſt. If they have many ſcents, and it is quite uncertain which is the hunted fox, let him ſtop thoſe that are fartheſt down the wind; as they can hear the others, and will reach them ſooneſt: in ſuch a caſe there will be little uſe in ſtopping thoſe that are up the wind. When hounds are at a check, let every one be ſilent and ſtand ſtill. Whippers-in are frequently at this time coming on with the tail-hounds. They ſhould never halloo to them when the hounds are at fault; the leaſt thing does them harm at ſuch a time, but a halloo more than any other. The huntſman, at a check, had better let his hounds alone; or content himſelf with holding them forward, without taking them off their noſes.—Should they be at a fault, after having made their own caſt (which the huntſman ſhould always firſt encourage them to do), it is then his buſineſs to aſſiſt them farther; but except in ſome particular inſtances, I never approve of their being caſt as long as they are inclined to hunt. The firſt caſt I bid my huntſman make is generally a regular one, not chooſing to rely entirely on his judgment: if that ſhould not ſucceed, he is then at liberty to follow his own opinion, and proceed as obſervation or genius may direct. When ſuch a caſt is made, I like to ſee ſome mark of good ſenſe and meaning in it; whether down the wind, or towards ſome likely cover or ſtrong earth. However, as it is at beſt uncertain, I always wiſh to ſee a regular caſt before I ſee a knowing one; which, as a laſt reſource, ſhould not be called forth till it be wanted: The letting hounds alone is but a negative goodneſs in a huntſman; whereas it is true this laſt ſhows real genius; and to be perfect, it muſt be born with him. There is a fault, however, which a knowing huntſman is too apt to commit: he will find a freſh fox, and then claim the merit of having recovered the hunted one. It is always dangerous to throw hounds into a cover to retrieve a loſt ſcent; and unleſs they hit him in, is not to be depended upon.

“ Gentlemen, when hounds are at fault, are too apt themſelves to prolong it. They ſhould always ſtop their horſes ſome diſtance behind the hounds; and if it be poſſible to remain ſilent, this is the time to be ſo. They ſhould be careful not to ride before the hounds or over the ſcent; nor ſhould they ever meet a hound in the face unleſs with a deſign to ſtop him. Should you at any time be before the hounds, turn your horſe's head the way they are going, get out of their track, and let them paſs by you. In dry weather, and particularly in heathy countries, foxes will run the roads. If gentlemen at ſuch times will ride cloſe upon the hounds, they may drive them miles without any ſcent.—High mettled fox-hounds are ſeldom inclined to ſtop whilſt horſes are cloſe at their heels. No one ſhould ever ride in a direction which if perſiſted in would carry him amongſt the hounds, unleſs he be at a great diſtance behind them.

“ The firſt moment that hounds are at fault is a critical one for the ſport-people, who ſhould then be very attentive. Thoſe who look forward may perhaps ſee the fox; or the running of ſheep, or the purſuit of crows, may give them ſome tidings of him. Thoſe who liſten may ſometimes take a hint which way he is gone from the chattering of a magpye; or perhaps be at a certainty from a diſtant halloo: nothing that can give any intelligence at ſuch a time ought to be neglected. Gentlemen are too apt to ride all together: were they to ſpread more, they might ſometimes be of ſervice; particularly thoſe who, from a knowledge of the ſport, keep down the wind; it would then be difficult for either hounds or fox to eſcape their obſervation.—You ſhould, however, be cautious how you go to a halloo. The halloo itſelf muſt in a great meaſure direct you; and though it afford no certain rule, yet you may frequently gueſs whether it can be depended upon or not. At the ſowing-time, when boys are keeping off the birds, you will ſometimes be deceived by their halloo; ſo that it is beſt, when you are in doubt, to ſend a whipper-in to know the certainty of the matter.”

Hounds ought not to be caſt as long as they are able to hunt. It is a common, though not a very juſt idea, that a hunted fox never ſtops; but our author informs us that he has known them ſtop even in wheel-ruts in the middle of a down, and get up in the middle of the hounds. The greateſt danger of loſing a fox is at the firſt finding him, and when he is ſinking; at both which times he frequently will run ſhort, and the eagerneſs of the hounds will frequently carry them beyond the ſcent. When a fox is firſt found, every one ought to keep behind the hounds till they are well ſettled to the ſcent; and when the hounds are catching him, our author wiſhes them to be as ſilent as poſſible; and likewiſe to eat him eagerly after he is caught. In ſome places they have a method of *treeing* him; that is, throwing him acroſs the branch of a tree, and ſuffering the hounds to bay at him for ſome minutes before he is thrown among them; the intention of which is to make them more eager, and to let in the tail-hounds; during this interval alſo they recover their wind, and are apt to eat him more readily. Our author, however, adviſes not to keep him too long, as he ſuppoſes that the hounds have not any appetite to eat him longer than while they are angry with him.

2. *Under ground.* In caſe a fox does ſo far eſcape as to earth, countrymen muſt be got together with ſhovels, ſpades, mattocks, pickaxes, &c. to dig him out, if they think the earth not too great. They make their earths as near as they can in ground that is hard to dig, as in clay, ſtony ground, or amongſt the roots of trees; and their earths have commonly but one hole, and that is ſtraight a long way in before you come at their couch. Sometimes craftily they take poſſeſſion of a badger's old burrow, which hath a variety of chambers, holes, and angles.

Now to facilitate this way of hunting the fox, the huntſman muſt be provided with one or two terriers to put into the earth after him, that is, to fix him into an angle; for the earth often conſiſts of many angles: the uſe of the terrier is to know where he lies; for as ſoon as he finds him, he continues baying or barking, ſo that which way the noiſe is heard that way dig to him. Your terriers muſt be garniſhed with bells hung in collars, to make the fox bolt the ſooner; beſides, the collars will be ſome ſmall defence to the terriers.

The inſtruments to dig withal are theſe; a ſharp-pointed ſpade, which ſerves to begin the trench where the ground is hardeſt and broader tools will not ſo well enter; the round hollowed ſpade, which is uſeful to dig among roots, having very ſharp edges; the broad flat ſpade to dig withal, when the trench has been pretty well opened, and the ground ſofter; mattocks and pickaxes to dig in hard ground, where a ſpade will do but little ſervice; the coal-rake to cleanſe the hole, and to keep it from ſtopping up; clamps, wherewith you may take either fox or badger out alive to make ſport with afterwards. And it would be very convenient to have a pail of water to refreſh your terriers with, after they are come out of the earth to take breath.

Hare-Hunting. As, of all chaſes, the hare makes the greateſt paſtime, ſo it gives no little pleaſure to ſee the craft of this ſmall animal for her ſelf-preſervation. If it be rainy, the hare uſually takes to the high-ways; and if ſhe come to the ſide of a young grove, or ſpring, ſhe ſeldom enters, but ſquats down till the hounds have over-ſhot her; and then ſhe will return the very way ſhe came, for fear of the wet and dew that hangs on the boughs. In this caſe, the huntſman ought to ſtay an hundred paces before he comes to the wood-ſide, by which means he will perceive whether ſhe return as aforeſaid; which if ſhe do, he muſt halloo in his hounds; and call them back; and that preſently, that the hounds may not think it the counter ſhe came firſt.

The next thing that is to be obſerved, is the place where the hare ſits, and upon what wind ſhe makes her form, either upon the north or ſouth wind: ſhe will not willingly run into the wind, but run upon a-ſide, or down the wind; but if ſhe form in the water, it is a ſign ſhe is foul and meaſled: if you hunt ſuch a one, have a ſpecial regard all the day to the brook-ſides; for there, and near plaſhes, ſhe will make all her croſſings, doublings, &c.

Some hares have been ſo crafty, that as ſoon as they have heard the ſound of a horn, they would inſtantly ſtart out of their form, though it was at the diſtance of a quarter of a mile, and go and ſwim in ſome pool, and reſt upon ſome ruſh-bed in the midſt of it; and would not ſtir from thence till they have heard the ſound of the horn again, and then have ſtarted out again, ſwimming to land, and have ſtood up before the hounds four hours before they could kill them, ſwimming and uſing all ſubtilties and croſſings in the water. Nay, ſuch is the natural craft and ſubtilty of a hare, that ſometimes after ſhe has been hunted three hours, ſhe will ſtart a freſh hare, and ſquat in the ſame form. Others having been hunted a conſiderable time, will creep under the door of a ſheep-cot, and hide themſelves among the ſheep; or, when they have been hard hunted, will run in among a flock of ſheep, and will by no means be gotten out from among them till the hounds are coupled up, and the ſheep driven into their pens. Some of them (and that ſeems ſomewhat ſtrange), will take the ground like a coney, and that is called *going to the vault*. Some hares will go up one ſide of the hedge and come down the other, the thickneſs of the hedge being the only diſtance between the courſes. A hare that has been ſorely hunted, has got upon a quickſet-hedge, and ran a good way upon the top thereof, and then leapt off upon the ground. And they will frequently betake themſelves to furz buſhes, and will leap from one to the other, whereby the hounds are frequently in default.

Having found where a hare hath relieved in ſome paſture or corn field, you muſt then conſider the ſeaſon of the year, and what weather it is: for if it be in the ſpring-time or ſummer, a hare will not then ſet in buſhes, becauſe they are frequently infeſted with piſmires, ſnakes, and adders; but will ſet in corn-fields, and open places. In the winter-time, they ſet near towns and villages, in tufts of thorns and brambles, eſpecially when the wind is northerly or ſoutherly. According to the ſeaſon and nature of the place where the hare is accuſtomed to ſit, there beat with your hounds, and ſtart her; which is much better ſport than trailing of her from her relief to her form.

After the hare has been ſtarted and is on foot, then ſtep in where you ſaw her paſs, and halloo in your hounds, until they have all undertaken it and go on with it in full cry: then recheat to them with your horn, following fair and ſoftly at firſt, making not too much noiſe either with horn or voice; for at the firſt, hounds are apt to overſhoot the chace through too much heat. But when they have run the ſpace of an hour, and you ſee the hounds are well in with it, and ſtick well upon it, then you may come in nearer with the hounds, becauſe by that time their heat will be cooled, and they will hunt more ſoberly. But above all things, mark the firſt doubling, which muſt be your direction for the whole day; for all the doublings that ſhe ſhall make afterwards will be like the former; and according to the policies that you ſhall ſee her uſe, and the place where you hunt, you muſt make your compaſſes great or little, long or ſhort, to help the defaults, always ſeeking the moiſteſt and moſt commodious places for the hounds to ſcent in.

To conclude: Thoſe who delight in hunting the hare muſt riſe early, leſt they be deprived of the ſcent of the foot-ſteps.

Hart or Stag Hunting. Geſner, ſpeaking of hart-hunting, obſerves, that this wild, deceitful, and ſubtle beaſt, frequently deceives its hunter by windings and turnings. Wherefore the prudent hunter muſt train his dogs with words of art, that he may be able to ſet them on and take them off again at pleaſure.

Firſt of all, he ſhould encompaſs the beaſt in her own layer, and ſo unharbour her in the view of the dogs, that ſo they may never loſe her ſlot or footing. Neither muſt he ſet upon every one, either of the herd or thoſe that wander ſolitary alone, or a little one: but partly by ſight, and partly by their footing and fumets, make a judgment of the game, and alſo obſerve the largeneſs of his layer.

The huntſman, having made theſe diſcoveries in order to the chace, takes off the couplings of the dogs; and ſome on horſeback, others on foot, follow the cry, with the greateſt art, obſervation, and ſpeed; remembering and intercepting him in his ſubtile turnings and headings; with all agility leaping hedges, gates, pales, ditches; neither fearing thorns, down hills, nor woods, but mounting freſh horſe if the firſt tire. Follow the largeſt head of the whole herd, which muſt be ſingled out of the chace; which the dogs perceiving, muſt follow: not following any other. The dogs are animated to the ſport by the winding of horns, and the voices of the huntſmen. But ſometimes the crafty beaſt ſends forth his little ſquire to be ſacrificed to the dogs and hunters, inſtead of himſelf, lying cloſe the mean time. In this caſe, the huntſman muſt ſound a retreat, break off the dogs, and take them in, that is, leam them again, until they be brought to the fairer game; which riſeth with fear, yet ſtill ſtriveth by flight, until he be wearied and breathleſs. The nobles call the beaſt *a wiſe hart*, who, to avoid all his enemies, runneth into the greateſt herds, and ſo brings a cloud of error on the dogs, to obſtruct their farther purſuit; ſometimes alſo bearing ſome of the herd into his footings, that ſo he may the more eaſily eſcape by amuſing the dogs. Afterwards he betakes himſelf to his heels again, ſtill running with the wind, not only for the ſake of refreſhment, but alſo becauſe by that means he can the more eaſily hear the voice of his purſuers whether they be far from him or near to him. But at laſt being again diſcovered by the hunters and ſagacious ſcent of the dogs, he flies into the herds of cattle, as cows, ſheep, &c. leaping on a cow or ox, laying the foreparts of his body thereon, that ſo touching the earth only with his hinder feet, he may leave a very ſmall or no ſcent at all behind for the hounds to diſcern. But their uſual manner is, when they ſee themſelves hard beſet and every way intercepted, to make force at their enemy with their horns, who firſt comes upon him, unleſs they be prevented by ſpear or ſword. When the beaſt is ſlain, the huntſman with his horn windeth the fall of the beaſt; and then the whole company comes up, blowing their horns in triumph for ſuch a conqueſt; among whom, the ſkilfulleſt opens the beaſt, and rewards the hounds with what properly belongs to them, for their future encouragement; for which purpoſe the huntſmen dip bread in the ſkin and blood of the beaſt to give to the hounds.

It is very dangerous to go in to a hart at bay; of which there are two ſorts, one on land and the other in water. Now, if the hart be in a deep water, where you cannot well come at him, then couple up your dogs; for ſhould they continue long in the water, it would endanger their ſurbating or foundering. In this caſe, get a boat, and ſwim to him, with a dagger drawn, or elſe with a rope that has a nooſe, and throw it over his horns: for if the water be ſo deep that the hart ſwims, there is no danger in approaching him; otherwiſe you muſt be very cautious.

As to the land-bay, if a hart be burniſhed, then you muſt conſider the place; for if it be in a plain and open place, where there is no wood nor covert, it is dangerous and difficult to come in to him; but if he be on a hedge-ſide, or in a thicket, then, while the hart is ſtaring on the hounds, you may come ſoftly and covertly behind him, and cut his throat. If you miſs your aim, and the hart turn head upon you, then take refuge at ſome tree; and when the hart is at bay, couple up your hounds; and when you ſee the hart turn head to fly, gallop in roundly to him, and kill him with your ſword.

Directions at the Death of a Hart or Buck. The firſt ceremony, when the huntſman comes in to the death of a deer, is to cry "ware haunch," that the hounds may not break in to the deer; which being done, the next is the cutting his throat, and there blooding the youngeſt hounds, that they may the better love a deer, and learn to leap at his throat: then the mort having been blown, and all the company come in, the beſt perſon who hath not taken ſay before, is to take up the knife that the keeper or huntſman is to lay acroſs the belly of the deer, ſome holding by the fore legs, and the keeper or huntſman drawing down the pizzle, the perſon who takes ſay, is to draw the edge of the knife leiſurely along the middle of the belly, beginning near the briſket, and drawing a little upon, enough in the length and depth to diſcover how fat the deer is; then he that is to break up the deer, firſt ſlits the ſkin from the cutting of the throat downwards, making the arber, that ſo the ordure may not break forth, and then he paunches him, rewarding the hounds with it.

In the next place, he is to preſent the ſame perſon who took ſay, with a drawn hanger, to cut off the head of the deer. Which being done, and the hounds rewarded, the concluding ceremony is, if it be a ſtag, to blow a triple mort; and if a buck, a double one; and then all who have horns, blow a recheat in concert, and immediately a general whoop, whoop.

Otter-Hunting is performed with dogs, and alſo with a ſort of inſtruments called *otter-ſpears*; with which when they find themſelves wounded, they make to land, and fight with the dogs, and that moſt furiouſly, as if they were ſenſible that cold water would annoy their green wounds.

There is indeed craft to be uſed in hunting them; but they may be catched in ſnares under water, and by river-ſides: but great care muſt be taken, for they bite ſorely and venomouſly; and if they happen to remain long in the ſnare, they will not fail to get themſelves free by their teeth.

In hunting them, one man muſt be on one ſide of the river, and another on the other, both beating the banks with dogs; and the beaſt not being able to endure the water long, you will ſoon diſcover if there be an otter or not in that quarter; for he muſt come out to make his ſpraints, and in the night ſometimes to feed on graſs and herbs.

If any of the hounds find out an otter, then view the ſoft grounds and moiſt places, to find out which way he bent his head: if you cannot diſcover this by the marks, you may partly perceive it by the ſpraints; and then follow the hounds, and lodge him as a hart or deer. But if you do not find him quickly, you may imagine he is gone to couch ſomewhere farther off from the river; for ſometimes they will go to feed a conſiderable way from the place of their reſt, chooſing rather to go up the river than down it. The perſons that go a-hunting otters, muſt carry their ſpears, to watch his vents, that being the chief advantage; and if they perceive him ſwimming under water, they muſt endeavour to ſtrike him with their ſpears, and if they miſs, muſt purſue him with the hounds, which, if they be good and perfectly entered, will go chanting and trailing along by the river-ſide, and will beat every root of a tree, and oſier-bed, and tuft of bulruſhes; nay, they will ſometimes take water, and bait the beaſt, like a ſpaniel, by which means he will hardly eſcape.

Roe-buck Hunting is performed divers ways, and very eaſily in the woods.

When chaſed, they uſually run againſt the wind, becauſe the coolneſs of the air refreſhes them in their courſe; therefore the huntſmen place their dogs with the wind: they uſually, when hunted, firſt take a large ring, and afterwards hunt the hounds. They are alſo often taken by counterfeiting their voice, which a ſkilful huntſman knows how to do by means of a leaf in his mouth. When they are hunted, they turn much and often, and come back upon the dogs directly; and when they can no longer endure, they take foil, as the hart does, and will hang by a bough in ſuch a manner, that nothing of them ſhall appear above the water but their ſnout, and they will ſuffer the dogs to come juſt upon them before they will ſtir.

The veniſon of a roe-buck is never out of ſeaſon, being never fat, and therefore they are hunted at any time: only that ſome favour ought to be ſhown the doe while ſhe is big with fawn, and afterwards till her fawn is able to ſhift for himſelf; but ſome roe-does have been killed with five fawns in their bellies.

He is not called, by the ſkilful in the art of hunting, a *great* roe-buck, but a *fair roe-buck*; the herd of them is called a *bevy*: and if he hath not bevy-greaſe upon his tail, when he is broken up, he is more fit to be dog's meat than man's meat. The hounds muſt be rewarded with the bowels, the blood, and feet ſlit aſunder, and boiled all together; this is more properly called a *doſe* than a *reward*.

Hunting-Match. The firſt thing that is to be conſidered by one who deſigns to match his horſe for his own advantage, and his horſe's credit, is not to flatter himſelf with the opinion of his horſe, by fancying that he is a ſwift, when he is but a ſlow gallopper; and that he is a whole-running-horſe, that is, that he will run four miles without a ſob at the height of his ſpeed, when he is not able to run two or three. Very probably ſome gentlemen are led into this error, by their being miſtaken in the ſpeed of their hounds, who, for want of trying them againſt other dogs that have been really fleet, have ſuppoſed their own to be ſo, when in reality they are but of a middling ſpeed; and becauſe their horſe, when trained, was able to follow them all day, and upon any hour, to command them upon deep as well as light earths, have therefore made a falſe concluſion, that their horſe is as ſwift as the beſt: but, upon trial againſt a horſe that has been rightly trained after hounds that were truly fleet, have bought their experience perhaps full dear. Therefore it is adviſable for all lovers of hunting to procure two or three couple of tried hounds, and once or twice a week to follow after them at train-ſcent; and when he is able to top them on all ſorts of earth, and to endure heats and colds ſtoutly, then he may better rely on his ſpeed and toughneſs.

That horſe which is able to perform a hare-chaſe of five or ſix miles briſkly and courageouſly, till his body be as it were bathed in ſweat; and then, after the hare has been killed, in a nipping froſty morning, can endure to ſtand till the ſweat be frozen on his back, ſo that he can endure to be pierced with the cold as well as the heat; and then, even in that extremity of cold, to ride another chaſe as briſkly, and with as much courage as he did the former; that horſe which can thus endure heats and colds is moſt valued by ſportſmen. Therefore, in order to make a judgment of the goodneſs of a horſe, obſerve him after the death of the firſt hare, if the chace has been any thing briſk: if, when he is cold, he ſhrinks up his body, and draws his legs up together, it is an infallible ſign of want of vigour and courage: the like may be done by the ſlackening of his girths after the firſt chace, and from the dulneſs of his teeth, and the dulneſs of his countenance, all which are true tokens of faintneſs and being tired; and ſuch a horſe is not to be relied on in caſe of a wager.

Here it will not be improper to take notice of the way of making matches in former times, and the modern way of deciding wagers. The old way of trial was, by running ſo many train-ſcents after hounds, as was agreed upon between the parties concerned, and a bell-courſe, this being found not ſo uncertain, but more durable than hare hunting; and the advantage conſiſted in having the trains led on earth moſt ſuitable to the qualifications of the horſes. But now others chooſe to hunt the hare till ſuch an hour, and then to run this wild-gooſe chace; a method of racing that takes its name from the manner of the flight of wild-geeſe, which is generally one after another; ſo the two horſes, after running of twelve ſcore yards, had liberty, which horſe ſoever could get the leading, to ride what ground he pleaſed, the hindmoſt horſe being bound to follow him, within a certain diſtance agreed on by articles, or elſe to be whipped up by the triers or judges which rode by; and which ever horſe could diſtance the other won the match.

But this chace, in itſelf very inhuman, was ſoon found to be very deſtructive to good horſes, eſpecially when two good horſes were matched; for neither being able to diſtance the other till both were ready to ſink under their riders through weakneſs oftentimes the match was fain to be drawn and left undecided, though both the horſes were quite ſpoiled.

This brought on the cuſtom of train-ſcents, which afterwards were changed to three heats and a ſtraight courſe; and that the lovers of horſes might be encouraged to keep good ones, plates have been erected in many places in Britain. The fewer of theſe before you come to the courſe, if your horſe be fiery and mettled, the better; and the ſhorter the diſtance, the better. Alſo, above all things, be ſure to make your bargain to have the leading of the firſt train; and then make choice of ſuch grounds where your horſe may beſt ſhow his ſpeed, and the fleeteſt dogs you can procure: give your hounds as much law before you as your triers will allow, and then, making a looſe, try to win the match with a wind; but if you fail in this attempt, then bear your horſe, and ſave him for the courſe; but if your horſe be ſlow, but well-winded, and a true ſpurred nag, then the more train-ſcents you run before you come to the ſtraight courſe, the better. But here you ought to obſerve to gain the leading of the firſt train; which in this caſe you muſt lead upon ſuch deep earths, that it may not end near any light ground: for this is the rule received among horſemen, that the next train is to begin where the laſt ends, and the laſt train is to be ended at the ſtarting place of the courſe; therefore remember to end your laſt on deep earths, as well as the firſt.

HUNTINGDON, the county-town of Huntingdonſhire in England, ſeated upon an eaſy aſcent, on the north ſide of the river Ouſe. It was made a free borough by king John, conſiſting of a mayor, 12 aldermen, burgeſſes, &c. by whom the two members of parliament are choſen. It had anciently 15 pariſhes, and has now but two; in one of which, called *St John's*, Oliver Cromwell was born, in 1599. Here was formerly a caſtle, built by William the Conqueror, which afterwards belonged to David, a prince of Scotland, with the title of *earl*; but Henry VIII. gave it to George Haſtings, with the earldom annexed, in whoſe family it ſtill continues. It ſtands in the great north road; and has a bridge built of free-ſtone over the Ouſe, which is made navigable for ſmall veſſels as high as Bedford. It is the place where the aſſizes are kept, and where the county-jail ſtands. It has a good market-place, and ſeveral convenient inns, beſides a grammar-ſchool; and is very populous. W. Long. 0. 15. N. Lat. 52. 23.

HUNTINGDONSHIRE, a county of England, bounded on the ſouth by Bedfordſhire; on the weſt by Northamptonſhire, as alſo on the north; and by Cambridgeſhire on the eaſt; extending 36 miles in length from north to ſouth, 24 in breadth from eaſt to weſt, and near 67 in circumference. This county, which is in the dioceſe of Lincoln, is divided into four hundreds, and contains 6 market-towns, 29 vicarages, 78 pariſhes, 279 villages, about 8220 houſes, and upwards of 41,000 inhabitants; but ſends only four members to parliament, namely, two knights of the ſhire, and two members for Huntingdon. It is a good corn country; and abounds in paſtures, eſpecially on the eaſtern ſide, which is fenny. The reſt is diverſified by riſing hills and ſhady groves, and the river Ouſe waters the ſouthern parts.

The air of this county is in moſt parts pleaſant and wholeſome, except among the fens and meres, though they are not ſo bad as the hundreds of Kent and Eſſex. The ſoil is fruitful, and produces great crops of corn, and the hilly parts afford a fit paſture for ſheep. They have great numbers of cattle; and plenty of water-fowl, fiſh, and turf for firing; which laſt is of great ſervice to the inhabitants, there being but little wood, though the whole country was a foreſt in the time of Henry II. The only river beſides the Ouſe is the Nen, which runs through Whittleſey Mere.

HU-QUANG, a province of the kingdom of China, in Aſia, which has a great river called *Yang*, and *Tſe-chiang*, which runs acroſs it from eaſt to weſt. It is divided into the north and ſouth parts, the former of which contains eight cities of the firſt rank, and 60 of the ſecond and third; and the latter ſeven of the firſt rank, and five of the ſecond and third. It is a flat, open country, watered every where with brooks, lakes, and rivers, in which there are great numbers of fiſh. Here is plenty of wild-fowls; the fields nouriſh cattle without number, and the ſoil produces corn, and various kinds of fruits. There is gold found in the ſands of the rivers; and in the mines they have iron, tin, &c. In ſhort, there is ſuch a variety of all ſorts of commodities, that it is called *the magazine of the empire*.

HURA, in botany: A genus of the monadelphia order, belonging to the monœcia claſs of plants; and in the natural method ranking under the 38th order, *Tricoccæ*. The amentum of the male is imbricated, the perianthium truncated: there is no corolla; the filaments are cylindrical, peltated at top, and ſurrounded with numerous or double antheræ. The female has neither calyx nor corolla, the ſtyle is funnel-ſhaped; the ſtigma cleft in twelve parts; the capſule is twelve-celled, with a ſeed in each cell. There is but one ſpecies, *viz.* the crepitans, a native of the Weſt-Indies. It riſes with a ſoft ligneous ſtem to the height of 24 feet, dividing into many branches, which abound with a milky juice, and have ſcars on their bark where the leaves have fallen off. The male flowers come out from between the leaves upon foot-ſtalks three inches long; and are formed into a cloſe ſpike or column, lying over each other like the ſcales of fiſh. The female flowers are ſituated at a diſtance from them; and have a long funnel-ſhaped tube ſpreading at the top, where it is cut into 12 reflected parts. After the flower, the germen ſwells, and becomes a round compreſſed ligneous capſule, having 12 deep furrows, each being a diſtinct cell, containing one large round compreſſed ſeed. When the pods are ripe, they burſt with violence, and throw out their ſeeds to a conſiderable diſtance. It is propagated by ſeeds raiſed on a hot-bed; and the plants muſt be conſtantly kept in a ſtove. The kernels are ſaid to be purgative, and ſometimes emetic.

HURDLE, is the name of a ſledge uſed to draw traitors to the place of execution.

HURDLES, in fortification, are made of twigs of willows or oſiers interwoven cloſe together, ſuſtained by long ſtakes. They are made in the figure of a long ſquare, the length being 5 or 6 feet, and the breadth three and an half. The cloſer they are wattled together, the better. They ſerve to render the batteries firm, or to cover traverſes and lodgments for the defence of the workmen againſt fire-works or ſtones thrown againſt them.

The Romans had a kind of military execution for mutineers called *putting to death under the hurdle.* The manner of it was this: The criminal was laid at his length in a ſhallow water, under an hurdle, upon which was heaped ſtones, and ſo preſſed down till he was drowned.

Hurdles, in huſbandry, certain frames made either of ſplit timber, or of hazle-rods wattled together, to ſerve for gates in incloſures, or to make ſheep-folds, &c.

HURDS, or **Hords**, of flax or hemp; the coarſer parts ſeparated in the dreſſings from the tear, or fine ſtuff. See Flax.

HURL-bone, in a horſe, a bone near the middle of the buttock, very apt to go out of its ſockets with a hurt or ſtrain.

HURLERS, a number of large ſtones, ſet in a kind of ſquare figure near St Clare in Cornwall, ſo called from an odd opinion held by the common people, that they are ſo many men petrified, or changed into ſtones, for profaning the ſabbath-day by hurling the ball, an exerciſe for which the people of that country have been always famous.

The hurlers are oblong, rude, and unhewed. Many authors ſuppoſe them to have been trophies erected in memory of ſome battle; others take them for boundaries to diſtinguiſh lands. Laſtly, others, with more probability, hold them to have been ſepulchral monuments.

HURLY-burley, in vulgar language, denotes confuſion or tumult, and is ſaid to owe its origin to two neighbouring families, Hurleigh and Burleigh, which filled their part of the kingdom with conteſt and violence.

HURON, a vaſt lake of North-America, ſituated between 84° and 89° W. Long. and between 43° and 46° of N. Lat. from whence the country contiguous to it is called *the country of the Hurons,* whoſe language is ſpoken over a great extent in the northern parts of America.

HURRICANE, a general name for any violent ſtorm of wind; but which is commonly applied to thoſe ſtorms which happen in the warmer climates, and which greatly exceed the moſt violent ſtorms known in this country. The ruin and deſolation accompanying a hurricane (ſays Dr Moſely†) cannot be deſcribed. Like fire, its reſiſtleſs force conſumes every thing in its track, in the moſt terrible and rapid manner. It is generally preceded by an awful ſtillneſs of the elements, and cloſeneſs and miſtineſs in the atmoſphere, which makes the ſun appear red, and the ſtars larger. But a dreadful reverſe ſucceeding—The ſky is ſuddenly overcaſt and wild—The ſea riſes at once from a profound calm into mountains—The wind rages and roars like the noiſe of cannon—The rain deſcends in deluges—A diſmal obſcurity envelopes the earth with darkneſs—The ſuperior regions appear rent with lightning and thunder—The earth often does and always ſeems to tremble—Terror and conſternation diſtracts all nature—Birds are carried from the woods into the ocean; and thoſe whoſe element is the ſea, ſeek for refuge on land—The frightened animals in the field aſſemble together, and are almoſt ſuffocated by the impetuoſity of the wind in ſearching for ſhelter: which, when found, ſerves them only for deſtruction—The roofs of houſes are carried to vaſt diſtances from their walls, which are beat to the ground, burying their inhabitants under them—Large trees are torn up by the roots, and huge branches ſhivered off, and driven through the air in every direction, with immenſe velocity—Every tree and ſhrub that withſtands the ſhock, is ſtripped of its boughs and foliage—Plants and graſs are laid flat on the earth—Luxuriant ſpring is changed in a moment to dreary winter.—This direful tragedy ended, when it happens in a town, the devaſtation is ſurveyed with accumulated horror: the harbour is covered with wrecks of boats and veſſels; and the ſhore has not a veſtige of its former ſtate remaining. Mounds of rubbiſh and rafters in one place, heaps of earth and trunks of trees in another, deep gullies from torrents of water, and the dead and dying bodies of men, women, and children, half buried, and ſcattered about, where ſtreets but a few hours before were, preſent the miſerable ſurvivors with a ſhocking concluſion of a ſpectacle to be followed by famine, and when accompanied by an earthquake, by mortal diſeaſes.

Theſe deſtructive phænomena are now thought to ariſe from electricity, though the manner in which it acts in this caſe is by no means known. It ſeems probable, indeed, that not only hurricanes, but even the moſt gentle gales of wind, are produced by the action of the electrical fluid; for which ſee the article Wind, Whirlwind, &c.

HURST, **Hyrst**, or **Herst**, are derived from the Saxon *hyrſt,* i. e. *a wood,* or *grove of trees.* There are many places in Kent, Suffolk, and Hampſhire, in England, which begin and end with this ſyllable; and the reaſon may be, becauſe the great wood called *Anderſwald* extended through thoſe counties.

Hurst-Caſtle, a fortreſs of Hampſhire in England, not far from Limington. It is ſeated on the extreme point of a neck of land which ſhoots into the ſea, towards the iſle of Wight, from which it is diſtant two miles.

HUSBAND, a man joined or contracted with a woman in marriage. See Marriage.

Husband-Land, a term uſed in Scotland for a portion of land containing ſix acres of ſock and ſcythe land; that is, of land that may be tilled with a plough, and mown with a ſcythe.

HUSBANDRY,

THE buſineſs of a farmer, or one who lives by cultivating the ground. In this view it includes not only agriculture, but ſeveral other branches connected with it, ſuch as the rearing of cattle, the management of the dairy, making butter, cheeſe, raiſing flax, timber, &c. the management of bees, and number of other articles which it is difficult to enumerate particularly.

1 Difference betwixt agriculture and huſbandry.

Agriculture, properly ſo called, treats only of the cultivation of different ſoils, and preparing them for yielding the largeſt crop of any kind of vegetables; but it belongs to huſbandry to make choice of the ſoil moſt proper for each different vegetable, and to manage matters ſo that each ſoil may carry what it is beſt adapted for, ſo that on the whole the produce of the farm may be as advantageous as poſſible. In like manner, the huſbandman muſt know what crops are moſt proper to be raiſed in the country where he lives, either with a view to ſale or to provender for cattle. The rearing of theſe, indeed, conſtitutes one of the moſt eſſential articles of huſbandry; it being requiſite that the huſbandman ſhould know not only how to feed them properly, but how to keep them free from diſeaſes, and to diſtinguiſh the beſt breeds, ſo that ſuch as are deſigned for work may be capable of doing the moſt at leaſt expence, and thoſe deſigned for ſale may with the leaſt trouble be brought in good condition to market, and afford the greateſt profit to himſelf as well as the beſt bargain to the purchaſer.

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† *Treatiſe on Tropical Diſeaſes,* &c. 8vo.

2
It is the intereſt of a huſbandman to render proviſions as cheap as poſſible.

It is by means of the huſbandman only that all the inhabitants of a country are enabled to live; whence it ought to be a conſideration with him to cultivate the ground in ſuch a manner, as may enable him to afford the produce at the loweſt price. Thus he will alſo conſult his own intereſt; for cheapneſs of proviſions is the only true means by which the population of any country can be advanced; and the greater the number of inhabitants, the greater market will the huſbandman have for his goods. Indeed, by a certain mode of arguing, it may be imagined, that it would be more advantageous to keep up proviſions at as high a price as poſſible, rather than to lower them: but however this may apply to manufactures of various kinds, it never can apply to huſbandry; for by raiſing the price of proviſions, the price of every other thing is alſo raiſed, and it becomes more difficult for the huſbandman himſelf to live, as well as others.

3
Of ſocieties for encouraging various branches of huſbandry.

4
Doubtful how far they have been really uſeful.

5
Improvements in huſbandry more apparent than real.

Thus the buſineſs of the huſbandman is not only extremely complicated and difficult, but important alſo; inſomuch, that ſocieties have been lately inſtituted in many different parts of Europe for its advancement, and premiums offered to thoſe who excelled in any particular branch. Some of theſe premiums are held out for raiſing the greateſt quantity of particular kinds of vegetables; others for gaining the greateſt extent of ground from the ſea: ſome for improving waſte ground; others for the invention of the moſt uſeful machines for harrowing, ſowing, and various operations in agriculture. But though the intention of theſe ſocieties is undoubtedly laudable and patriotic, and though the invention of man has in a manner been exhauſted to accompliſh the purpoſes for which they were inſtituted; it remains yet a matter of great doubt and uncertainty whether they have really been productive of any public good or not. It does not clearly appear, that the means of ſubſiſtence are rendered more generally eaſy, or that the lives of mankind are more happy and comfortable, than before any ſocieties were inſtituted, or before any conſiderable improvements in huſbandry were made. On the contrary, proviſions of all kinds, inſtead of becoming cheaper, have gradually become dearer, and their price on the whole is ſenſibly augmented every four or five years. Hence it is impoſſible to avoid concluding, that, notwithſtanding the *apparent* improvements which have been made in ſuch numbers, there is not any *real* one in the whole art.—Something of this kind has been taken notice of even by the members of theſe ſocieties themſelves; and on this ſubject Mr Wimpey expreſſes himſelf as follows:

Bath Papers, vol. iii. p. 171.

6
Opinion of Mr Wimpey.

“It is certainly clear from the average prices of corn and proviſions of all kinds for 20 years paſt, that there is not too much land in cultivation. Prices have advanced conſiderably above what has been deemed, and that juſtly too, the medium ſtandard. As a manufacturing and commercial country, it is properly the duty of the legiſlature to provide, as far as may be conſiſtently with the liberty of the ſubject, that the price of proviſions may be kept as near as poſſible to their medium value. This is conceived to be very practicable, even ſo as to be a convenience to the grower as well as the conſumer. Some writers (Locke, Monteſquieu, &c.) have ſuppoſed, that the advance of commodities in price is rather apparent and nominal than real. Things are not ſo much, if at all (ſay they), advanced in price, as it is imagined. The precious metals are exceedingly increaſed in quantity, and proportionably fallen in value. Poſſibly there may be ſome truth in this obſervation; if we go back ſome hundreds of years; and if taken upon a ſcale that comprehends all Europe: but for the term of 40 or 50 years, or even from the time that Mr Locke wrote to the preſent hour, there is little difference in the value of gold and ſilver; an ounce of either being much the ſame value now as then. The frequent and ſudden changes that take place in the price of corn and other commodities, which are ſometimes at double the price one year they were the foregoing, muſt be owing to ſome other cauſe than that abovementioned, which operates ſlowly, if at all, and is not perceptible in leſs than a century.

“If the quantity of corn and proviſions at market always has borne the ſame proportion to the demand there is for them, the price would be always invariably and unchangeably the ſame. The variation of the prices, therefore, is governed by the variation of the ſaid proportion. If the demand be greater and the quantity the ſame, or the demand the ſame and the quantity leſs, the price muſt neceſſarily advance; and *vice verſa*, if the quantity ſhould increaſe, and the demand remain the ſame, the price muſt as neceſſarily fall; and it is not in the power of man to make it otherwiſe. But though this immutable relation is beyond our power to alter, we can by art and induſtry augment the quantity, and thereby lower the price; cheapneſs being an infallible conſequence of plenty, which is the direct object of an improving cultivation. This is a matter of great conſequence to the poor labourer, the manufacturer, and the merchant; and no diſadvantage to the grower; becauſe, what he would loſe by the fall of price, he would gain by the increaſed conſumpt.

7
Why thoſe who have gained premiums from ſocieties have not been of any real ſervice to the country.

“It is not eaſy to conceive how many and how great the improvements are which have been made in this moſt important of all arts in the courſe of the preſent century. A patriotic ſpirit of uncommon ardour hath gone forth; and the nobility and gentry, like the ſenators of Rome, have ſet, as it were, their hands to the plough, and excited their tenants and neighbours to practices of which they had no idea before. Yea, they have done more; they have inſtituted ſocieties, and made them receptacles and diſtributors of uſeful knowledge; they have raiſed ſubſcriptions, and added marks of honour and pecuniary advantages to the rewards which naturally reſult from the attention and induſtry of the ingenious artiſt. But it muſt be allowed, that though much has been done, there ſtill remains much more to be done. Experimenters have not always (perhaps but ſeldom) entered into the views, and ably ſeconded the intentions, of thoſe valuable inſtitutions. Animated with the hope of obtaining the premiums held out by dint of extraordinary exertions, expenſive manures, and a concurrence of fortunate circumſtances, more the effect of chance than of deſign, they often have been the ſucceſsful adventurers, though at the ſame time entirely ignorant to what cauſes they owed their ſucceſs. We too often indeed aſcribe effects to cauſes which are no way connected with them. The practice of ſuch men is more like the noſtrums of quacks, than the recipes of a regular phyſician. The medicine may be good; but being ignorant of principles, they know not how to accommodate it as circumſtances may require."

8
Improvements made in huſbandry hitherto attended with no profit.

Conſiderations of this kind muſt certainly lead us to ſuppoſe, that moſt, if not *all*, the improvements made in huſbandry for a long time paſt, are too expenſive; and that, though by their means larger crops are now obtained than formerly, the profits are more than ſwallowed up by the enormous ſums required to produce them. Hence we have as yet obtained only larger or more elegantly formed *beaſts* of different kinds; and whether this acquiſition is ultimately to be conſidered as *profitable*, remains yet to be determined. Unfortunately this ſentiment ſeems to be confirmed by taking a review of the agricultural improvements made during the laſt half-century. Theſe are:

Bath-Papers, vol. 5.

9
Account of the improvements in agriculture for the laſt half century.

1. *Improvements in the Art of Tillage.* Improvements of this kind conſiſt in more perfectly breaking and pulveriſing the ſoil, and keeping it more free from weeds than formerly. Mr Jethro Tull was the author of theſe, and ſhowed the advantages thence ariſing. By frequent turning over and pulveriſing the ſoil, we not only deſtroy the weeds very effectually, but likewiſe grubs, beetles, worms, and maggots of many different kinds. "Nothing (ſays Mr Wimpey) ſo effectually prevents the ravages of the ſeveral tribes of ſubterraneous inſects as the frequent ſtirring and crumbling the ground: I have had large patches of ſeveral poles ſquare in a field of beans deſtroyed by the grub of the cock-chaffer; and many hundreds of cabbage-plants by a grey grub of ſmaller ſize. Both theſe execute their miſchief under-ground. The former eat the roots of the beans even when in kid, and then they wither, fall, and die: the latter bites off the ſtem of the plant juſt under the ſurface, and does infinite miſchief: but I have always found tillage, duly performed, capable of deſtroying the whole race."

2. *Invention of new Implements of Huſbandry*, or *improvements of the old.* This claſs includes all the new invented ploughs, harrows, horſe and hand hoes, &c. by means of which it is generally ſuppoſed that the work of tillage can be performed at much leſs expence, as well as more effectually than formerly.

3. *Saving a great quantity of ſeed in ſowing, and the production of better crops, by the more regular diſtribution of what is ſown.* This improvement chiefly conſiſts in drilling inſtead of ſowing in the broad-caſt way as formerly. The gain is here evident; and Mr Wimpey calculates it at a tenth or twelfth part of the whole produce: and if the community are not yet ſenſible of any advantage from ſuch a conſiderable ſaving, it muſt be becauſe the drilling huſbandry has not yet become very general.

4. *Suiting the Crop to the Nature and Condition of the Soil.* The farmer is now enabled to do this better than formerly, by the introduction of a number of new vegetables formerly unknown. Thus, as there are many grounds very unfit for the production of wheat, there is now no occaſion for reaping ſcanty crops of it from ſuch as are little adapted to the raiſing of that grain; becauſe another article, for which perhaps there was formerly no demand, may now be raiſed with conſiderable profit on a ſoil where wheat will not grow to any advantage.

5. *The Rotation of Crops.* Thus a very conſiderable addition is made to the produce of the ground by keeping it perpetually fertile; whereas formerly it was often worn out and rendered barren by too frequent cropping, when a proper rotation was not known.

6. *The Introduction of new Manures.* Theſe are principally lime and marle; of the action of which an account is given under the article Agriculture, n° 20.

7. *The Introduction of many new Articles into Field-Culture.* Theſe, whatever profit they may yield to the farmer, conſiſt principally of provender for cattle. They ought, however, to have a conſiderable effect in producing plentiful harveſts, as hereby the cattle may be ſuppoſed to do their work more perfectly, and to be maintained at leſs expence than before.

8. *The Application of theſe to the rearing and fattening of Cattle.* The good effects of this ought to be felt in the manner mentioned in the former article, and partly in lowering the price of fleſh-meat, and conſequently of all other kinds of proviſions.

10
Little advantage reſulting from the whole.

Thus we ſee, that in the courſe of half a century, methods have been found of eradicating weeds, deſtroying inſects, ſaving vaſt quantities of ſeed-corn, of ſuiting the crops to the ſoil, of uſing new manures, raiſing new plants; and all this, together with multitudes of new machines in performing in a better manner the operations of agriculture, has apparently amounted to mere nothing. The price of proviſions ſeems to have begun to riſe with the improvements, and to be continually advancing. It is by no means in our power to point out particularly the cauſes of ſo diſagreeable an event. It muſt, however, undoubtedly depend on ſome miſcalculation, or over-rating the profits which have ariſen from thoſe improvements: whence the landholders have uniformly been induced to raiſe their rents, while the farmers, finding their expence greatly augmented not only on account of the advance of rent, but likewiſe from the more coſtly modes of tillage, have been obliged to augment the prices of their grain beyond what the increaſed influx of money into the kingdom would bear.

11
Conjectures concerning the cauſes.

—Such miſcalculations are not uncommon in every buſineſs. A manufacturer is apt to be enticed by a certainty of having an increaſe of his goods in a given time: but frequently, when improvements are tried, it is found that the abſolute expence, or the quantity of labour requiſite to produce the increaſe is greater than the augmentation of profit can bear; and he is afterwards, with regret and loſs, obliged to lay aſide the improvements from which he had once ſuch hopes. In the like manner, we fear, it has fared with the huſbandman. The improvement in huſbandry originated principally among the landholders; whoſe principal view, we may ſuppoſe, was an augmentation of rent. The tenants were obliged to attempt improvements in order to pay the advance, as well as by the expreſs order of their landlords. Hence they were induced to keep a great number of horſes, that their lands might be tilled with ſufficient expedition, and in a more perfect manner than before. The oxen, formerly made uſe of, and which anſwered the purpoſes both of proviſion and labour, were diſcarded, and a ſet of moſt expenſive animals, uſeleſs except for the purpoſes of labour or pleaſure, introduced in their ſtead. A vaſt quantity of grain, which ought to have ſuſtained the human ſpecies, was thus beſtowed on the brute creation: and though this might in ſome meaſure be ſuppoſed to be counteracted by the increaſe of crop in conſequence of employing horſes, it is evident that it has not anſwered the general expectation; ſince we may ſay, that the farmers have not been able to pay one penny of advanced rent without advancing alſo the price of their grain.

12
Of the rearing of cattle.

With regard to the rearing of cattle, the caſe is equally doubtful. The moſt extravagant prices have been given for the beſt breeds as they are called; but it remains yet to be proved, that theſe breeds are really more uſeful to the country than the ſmaller ones. The expence of keeping them is undoubtedly greater, and this expence is enhanced by the large cattle being generally leſs hardy than the ſmaller. It ſeems, beſides, impoſſible that one large horſe, for inſtance, can be equally uſeful with two ſmall ones, even though he ſhould be as ſtrong as both; for this plain reaſon, that two horſes, though ever ſo ſmall, can be put to two different kinds of work at once, which cannot be done with the largeſt ſingle horſe imaginable. The like is applicable to black cattle: We cannot ſuppoſe the largeſt ſingle ox to be equal to two ordinary oxen, though he may perhaps require more to fatten him than would bring to market three or four of an ordinary quality; and ſo of other animals.

13
Of the other improvements in huſbandry.

It is much to be feared that the ſame reaſoning extends to moſt of the improvements hitherto made in huſbandry. The vegetative powers of the earth cannot be made always to exert themſelves to the utmoſt, without an expence which the increaſe of produce can by no means balance. By a total neglect of culture, indeed, the ſoil will produce little or nothing; by a moderate degree of culture the product will be greatly augmented, the farmer will be enabled to pay his rent, and at the ſame time to afford his grain at ſuch a price as can allow the labourers to live comfortably: but if we go on with extraordinary methods of culture, expecting to increaſe the produce of the ſoil, and to be able to exact an augmentation of rent *ad infinitum*, we will certainly be deceived; for thus the price of proviſions muſt be infinitely increaſed alſo. Thus, indeed the produce of the ground will be ſomewhat increaſed, but the farmer will ultimately be a loſer; ſo that, to ſave himſelf from ruin, he muſt at laſt burthen the public both with his advanced rent and the expence of moſt of his improvements, by advancing the price of grain and of all kinds of proviſions.

Such ſeem in general to be the reaſons why the country has reaped ſo little advantage by the improvements made of late in the affairs of agriculture and huſbandry. If experiments are now to be made, it is plain that they ought to be with a view to determine that medium of culture which the ground can bear with the greateſt profit, comparing the expence and produce of the two different modes together; and that mode which is the leaſt expenſive ought undoubtedly to be choſen, even though attended with no more profit than that which is executed at a greater expence. Thus, if a farmer, by laying out 5*l.* can produce a crop equivalent to 7*l.* he ought undoubtedly to prefer that to a mode of cultivation by which he lays out ſeven to procure nine. Nay, though by his new method he ſhould procure 9*l.* 10*s.* by laying out 7*l.* it would ſtill be evidently for the good of the community that the former method were followed. The reaſon of this is, that every expence of the huſbandman, as well as of every other, muſt ultimately be defrayed by the community at large. Thus if the huſbandman employs a greater number of hands than would otherwiſe be neceſſary, it is plain that the expence of theſe muſt be defrayed by the community, not only becauſe of the proviſions they muſt neceſſarily conſume, but becauſe each of theſe, were he not employed in that particular way, might contribute in ſome other towards his own ſupport and that of others: and the very ſame may be ſaid of the farmer who employs a greater number of horſes than would otherwiſe be neceſſary. Now, in the example juſt given, the farmer, or the community at large, by laying out 5*l.* gain 40*s.* which is 40 *per cent.*; but in the other caſe, *viz.* that of expending 7*l.* for a return of 9*l.* 10*s.* the farmer indeed gets 50*s* inſtead of 40*s.* but the community do not gain equally, having now not quite 36 *per cent.* inſtead of 40 which they had before.

14
Diſadvantage of allowing farmers to expend large ſums on agriculture, in order to enrich themſelves by a ſmall proportion of profit.

Hence it becomes evident, that by encouraging individuals to expend large ſums on agriculture, and thus diminiſh the proportion of their own profits, the community muſt always ſuffer, and a riſe of proviſions will infallibly take place, whether the individuals enrich themſelves or not. Evils of this nature can be remedied only by the legiſlature; but it is to be feared that the time is yet very diſtant when any certain mode of culture will be eſtabliſhed by law; and until this happen, it is vain to think that either the ſpeculations or experiments of individuals or of ſocieties will be attended with much benefit to the community, whatever advantage particular perſons may ſometimes derive from them. Leaving this ſubject, therefore, we ſhall now proceed to thoſe which more immediately relate to the buſineſs of huſbandry in its preſent ſtate.

15
Diviſion of huſbandry into three parts.

In conſidering this ſubject in its full extent, it evidently divides itſelf into three parts; the *firſt*, Relating to the cultivation of ſuch vegetables as are proper for the ſubſiſtence of mankind or the rearing of cattle; as grain, graſs, cabbage, turnips, and other vegetables of that kind; the *ſecond*, Such as belong more particularly to trade and commerce; as flax, hemp, hops, bees, timber, &c. Under both theſe are included the knowledge of various manures, of the nature of different ſoils, &c. The *third* part includes, the raiſing and management of cattle, poultry, of the dairy, with other adventitious articles, leſs connected with agriculture; of all which we ſhall now treat in order.

PART

Part. I. Of the Vegetables moſt proper to be raiſed for the uſe of the Human Species, or as Food for Cattle.

AMONG thoſe raiſed for the uſe of mankind, wheat has univerſally been ſuppoſed to hold the firſt place, and other kinds of grain to be the next to it; but in modern times, an author of no mean reputation has ariſen, who endeavours to prove that wheat ought not to be cultivated, nor bread to be eaten. This is M. Linguet, who has written a treatiſe expreſsly upon the ſubject; and, ridiculous as the aſſertion may ſeem, has been thought worthy of a formal refutation by Dr Tiſſot.—One of M. Linguet's arguments is, that wheat impoveriſhes the ground on which it grows: but in oppoſition to this, Dr Tiſſot urges, that corn is more eaſily cultivated than graſs; and that conſequently, in the country he ſpeaks of (Switzerland), the beſt fields are appropriated to hay, and the worſt to corn. "If there are ſome diſtricts of very poor land (ſays he) almoſt entirely ſown with corn, they are not poor becauſe they produce only corn, but becauſe they are not fit to produce any thing elſe. Their ſoil is ſo bad, that they can grow but very little fodder: conſequently they maintain only ſuch cattle as are abſolutely neceſſary for labour; and thoſe are ill fed, and frequently periſh. They have but little manure, and their crops are ſmall; for large crops of all ſorts can only be expected from lands naturally rich or ſtrongly manured. Thus the poverty of the inhabitants is only owing to their poſſeſſing an ungrateful ſoil.—What proves evidently that it is the natural ſoil which is in the fault, and not the corn which impoveriſhes, is, that where there is meadow and arable land, the price of the meadow-land is much more conſiderable than that of the arable. In moſt parts of this country the proportion is nearly ten to one; and there are even ſome meadows, for one part of which they would give 30 of field-lands; and ſome of vines, for which 100 of arable would be given. Thoſe diſtricts where the ſoil will produce nothing but corn, are poor; but in thoſe which furniſh fodder, and alſo fine crops of grain, the inhabitants are wealthy and happy, unleſs they are oppreſſed by taxes."

M. Linguet draws another objection from the length of time required to cultivate wheat; but Tiſſot, by another calculation, ſhows, that 48 days work throughout the year would cultivate more wheat than is ſufficient for a family of ſix perſons. The time neceſſary for cultivation of arable land alſo does not increaſe in proportion to its extent; but in caſe more is cultivated than is requiſite for the ſubſiſtence of the family, a trade is formed, which might be increaſed to an unlimited extent. He then compares the time requiſite for the cultivation of vines which are recommended by M. Linguet, and finds it to be much longer than that required for wheat. "I know very well (ſays he) that the one requires cattle, and the other does not: but theſe cattle, far from being expenſive, will, if properly managed, increaſe the gain of the farmer; therefore they muſt not be looked upon as an expence. Corn is ſubject to many accidents, but vines are ſubject to many more: thoſe which the vines ſuffer, ſometimes ſpoil the vintage for ſeveral years; whereas thoſe which happen to arable land, only ſpoil the crop for the ſeaſon: and as the expence of cultivating vines, for which only manual labour can be employed, is much more conſiderable; therefore the *vigneron* (or perſon who cultivates vines), who engages more largely than the farmer, will conſequently be a much greater loſer if unſucceſsful.—Hay is alſo ſubject to frequent and very diſagreeable accidents; the ſecuring it is ſometimes very difficult; and, when it is badly made, it is very hurtful to cattle.—A ſingle fact will be ſufficient to prove the caſualties to which hay is ſubject; *viz.* that it varies in price as much as grain. Accidents of hay-mows taking fire are but too frequent; and this is not to be feared in corn-mows."

The other objections of M. Linguet to wheat appear to be quite frivolous; ſo that concerning the cultivation of this grain, Dr Tiſſot draws the following concluſions: "It appears then, from what has been ſaid, that wheat is not a commodity that is impoveriſhing in itſelf; and that this grain will grow indifferently at leaſt in lands and ſituations which are unfavourable to other plants. This grain is likewiſe adapted to moſt climates; and if there are diſtricts almoſt entirely ſown with wheat, and yet poor, it is the fault of the ſoil, and not of this uſeful grain."

But the moſt extraordinary argument perhaps ever thought of on this ſubject is M. Linguet's aſſertion, that the uſe of wheat, or bread made from it, is detrimental to population; and that the countries where this grain is cultivated are poor and thinly inhabited, whereas thoſe which abound with vineyards and paſture-lands are rich and populous. But this, in Dr Tiſſot's opinion, ſhows only that one ſoil is more rich than another, and that a fertile ſoil will maintain moſt inhabitants. "No perſon (ſays he) is more capable of aſſigning the cauſe of the ſubjection of the Roman empire to the northern powers, than M. Linguet; but he cannot ſurely be ſerious when he ſays, that they were enabled to conquer them becauſe thoſe northern countries produced no corn, and that population decreaſed ſince the introduction of grain. I ſhall make three obſervations on this paſſage; Firſt, the armies of Guſtavus Adolphus, Charles XII. and the king of Pruſſia, whoſe food was bread, would be formidable againſt the Italians of thoſe times, who eat leſs than was eaten in the days of Scipio, as their anceſtors were 1400 years ago againſt the Romans: and M. Linguet muſt certainly know, that thoſe Greeks who ſubſiſted on bread, thoſe Romans who eat nothing but bread and vegetables in pottage, ſubdued all the known world, among whom were many nations who ate leſs bread than themſelves. A Roman ſoldier's allowance of bread was much greater than what ſoldiers have at preſent; and by the uſe of this food they had much more ſtrength than our modern ſoldiers can boaſt of. The allowance to a Roman ſoldier was 64 pounds of wheat per month; and this he was ſtrictly forbidden either to ſell or exchange. Their ſoldiers had very ſeldom any cheeſe, bacon, or pulſe; ſo that wheat was almoſt their only food, and the proportion was double of what is allowed ſoldiers in our days. They ate it in bread, in flour-milk, and in thin cakes; and they were not ſubject to epidemic or putrid diſorders, which is too much the caſe with our modern armies. We may eaſily judge from the weight of their accoutrements, that the Roman ſoldiers were not poſſeſſed of leſs perſonal ſtrength than thoſe which compoſe the armies at this day; they were not leſs brave, nor did their food render them in any way unhealthy: on the contrary, where there is ſuch difficulty in procuring a ſupply of good animal food to an army, as is often the caſe in modern times, it is probable that reducing them to the ſimple diet of a Roman ſoldier would be the moſt proper method of preventing epidemic diſeaſes among them. Secondly, it is very doubtful whether thoſe countries were more populous formerly than they are at this time; it is even probable that they were leſs ſo. Laſtly, the people of theſe northern countries were not without wheat; it was the baſis of their food and drink: without quoting other authors who atteſt it, ſuffice it to ſay, that Tacitus affirms it." &c.

In this laſt particular, however, our author appears to be miſtaken; but whatever may be in this, we apprehend that few of our readers will entertain any doubt concerning the wholeſomeneſs of wheat, or the propriety of making it into bread after once it is cultivated. The truly important matter is to determine, whether it be a profitable crop or not for the perſon who cultivates it? In this reſpect indeed it has been condemned by the generality of farmers, and dairy-farms are univerſally ſuppoſed to be more profitable than ſuch as produce corn. The vaſt ſuperiority of the former is ſet forth by Thomas Davis, Eſq; of Longleat, in the following words. "Experience ſufficiently evinces the extreme difficulty of perſuading tenants that they get more (generally ſpeaking) by feeding their lands, than by ploughing them; yet it requires very few arguments to convince a landlord, that in cold wet lands eſpecially, the leſs ploughed land you have, the leſs you put it in a tenant's power to ruin your eſtate. That a tenant of 60 l. per annum on a dairy farm will get money, while a corn farm of the ſame ſize will ſtarve its occupier (though perhaps the former gives 15 s. per acre for his land, and the latter only 10 s.), is ſelf-evident. The plough is a friend of every body's, though its advantages are very far from being particularly and locally felt; corn being an article that will bear keeping till the whim or caprice, or ſuppoſed advantage of its poſſeſſor, call it forth. But the produce of the cow is far otherwiſe. Cheeſe muſt neceſſarily be ſold at a certain period: it is a ponderous article; and one-twelfth, or at leaſt one-fifteenth, of its value, is often paid for carrying it to a fair 50 miles off; and the butter and ſkimmed milk find their way no great diſtance from home, as is evident by the price of butter varying frequently one-third in 20 or 30 miles. Every inhabitant of Bath muſt be ſenſible, that butter and cheeſe have riſen one-third or more in price within 20 years. Is not this owing to the great encouragement given to the plough and to grazing, at a time when, on account of the increaſed demand for milk, cream, butter, and cheeſe, every exertion on behalf of the dairy ſhould have been encouraged?" &c.

Bath Papers, vol. iii

In ſome remarks on this letter by Mr Billingſley, the ſame ſuperiority of dairy-farms to the arable kind is aſſerted in the moſt poſitive terms. "Perhaps (ſays he) there cannot be a ſtronger proof of the inferiority of the plough with reſpect to profit, than the ſuperior punctuality of the dairy-farmer in the payment of his rent. This obſervation, I believe, moſt ſtewards who ſuperintend manors devoted partly to corn and partly to dairy-farms, will verify: at leaſt I have never met with one who controverts it. But perhaps the advocate for the plough will deſire me not to confound the abuſe of a thing with its intrinſic excellence; and ſay, that the generality of corn farmers are moſt egregious ſlovens; that lands devoted to the plough are not confined to ſuch a mediocrity of profit as 10 s. per acre; that the produce of artificial graſſes (without which a well managed arable farm cannot exiſt), far exceeds that of natural graſs both in reſpect of quantity and ſituation; that the ſtraw-yard is a moſt convenient receptacle for the cow when freed from the pail. Theſe, and many other reaſons, may be adduced to ſhow the propriety of walking in the middle path, and of judiciouſly blending *arable* with *paſture*, in the proportion perhaps of *three* of the latter to *one* of the former."

On theſe letters we ſhall only remark, that for the good of mankind we hope the opinions they contain will never come into general practice; as thus the price of bread muſt be raiſed ſo high, that the lower claſſes of people would be entirely deprived of it. In the Bath Papers, vol. v. p 43. we have a method propoſed by Mr Wimpey of improving ſmall arable farms in ſuch a manner as to make them yield as much milk, butter, and cheeſe, as thoſe which are kept continually in paſture. He agrees with the maxim already mentioned, that ſmall arable farms do not afford the occupier ſo good a maintenance as dairy farms of the ſame value; and that the poſſeſſor of a dairy farm will do well and ſave money, while the former, with much toil and trouble, is ſtarving himſelf and family. Notwithſtanding this, he maintains, that there is an eſſential difference between ground that is naturally arable, and ſuch as is by nature adapted for paſture. Land which is naturally arable, according to him, can by no means be converted into paſture of any duration. "Such as, from a wild ſtate of nature, over-run with furze, fern, buſhes and brambles, has been rendered fertile by means of the plough, muſt be kept in that improved ſtate by its frequent uſe; otherwiſe it would ſoon revert to that wild barren ſtate which was its original condition. A farm, therefore, which conſiſts wholly, or almoſt ſo, of land that is properly arable, muſt ever continue arable; for it is not practicable to render it in any degree fertile but by means of the plough, or to keep it long in that ſtate even when it is made ſo." He is of opinion, however, that by raiſing crops proper for feeding cattle, the poſſeſſor of an arable farm may raiſe as great a number of horned cattle as one who has a paſture farm; the only queſtion is, Whether he can be reimburſed of his expences by the produce? "To aſcertain this fact (ſays he), we muſt inquire what may be the average expences of keeping a milch-cow on a dairy-farm for any given time. It is ſaid, upon very good authority, that the expence is generally from 3l. to 3 l. 10s. per annum. Two acres and an half of paſture fit for this uſe is ſufficient to keep a cow the whole year through, and ſuch land is valued at from 25s. to 30 s per acre. At 25s. the keeping of each cow would amount to 3 l. 2 s. 6 d. per annum. A dairy-farm, therefore, conſiſting of 48 acres, at 25 s. per annum, would amount to 60 l. rent; and the number of cows that might be kept on ſuch a farm would be about 20. In the next place, with regard to the expence of keeping a cow upon food raiſed in arable land as a ſuccedaneum for graſs, we are aſſured by unqueſtionable authority, that a buſhel of potatoes given half at night and half in the morning, with a ſmall allowance of hay is ſufficient to keep three cows a-day; by which allowance their milk will be as rich and as good as in the ſummer months when the cows are in paſture. An acre of land properly cultivated with potatoes, will yield 337 buſhels; and the total expence of cultivation, rent and tithe included, will not exceed 6l. 13 s. If three cows eat ſeven buſhels per week, then they would eat 364 buſhels in a year: and 20 cows would conſume 1433 buſhels;" So that, according to this calculation, ſeven acres and a quarter would nearly maintain as many cows as on the arable farm could be maintained by 48 acres. If then the cultivation of one acre of ground coſts 6l 13 s. the cultivation of ſeven acres and a quarter will coſt about 48 l. We have ſeen, however, that the rent of a dairy-farm capable of maintaining 20 milch-cows, is not leſs than 69 l. ſo that the calculation is thus entirely in favour of the arable farm; ſeven or eight acres of the arable farm being ſuperior by 19 l. in value, when cultivated with potatoes, to 48 acres of meadow or paſture-ground." "It muſt indeed be obſerved (adds our author), that in this ſtatement no allowance is made for the ſmall quantity of hay given to the cows with the potatoes. It muſt be noted alſo, that the account of cultivation is charged with 40 s. an acre for manure, and ſome expence for ploughing, which of right is chargeable to the crop of wheat that is to follow. Now, if we deduct 40 s. an acre from the expence of cultivating the potatoes, it reduces the ſum to 4 l. 13 s. and the whole expence upon ſeven acres and a quarter is thus leſs than 34 l. and conſequently the keeping of 20 cows is little more than half to the occupier of the arable farm what it is to the occupier of the grazing farm. If this concluſion be fairly drawn, and the calculation free from errors, it is matter of the greateſt importance, eſpecially to the little arable farmer. It plainly raiſes him from a ſtate of acknowledged inferiority to one greatly ſuperior.

16
Objection anſwered from an experiment of Mr Vagg.

Our author next proceeds to obviate an objection, "that the whole of his reaſoning muſt be indeciſive, as relating only to potatoes." In oppoſition to this, he adduces an experiment made on a pretty large ſcale by Mr Vagg; from which it appears, that cabbages, when raiſed upon arable ground, are nearly as much ſuperior to a natural crop as potatoes are. Twelve acres were employed in this experiment, and thoſe of an indifferent quality. The rent was 30 s. per acre, and the whole expence of culture and carting off the crop amounted only to 1 l. 14 s. ſo that all the coſt of the twelve acres was 38 l. 9s. From the produce were fed 45 oxen and upwards of 60 ſheep; and he was aſſured that they improved as faſt upon it as they do in the beſt paſture months, May, June, and July. "Now (ſays Mr Wimpey), if inſtead of 60 ſheep we reckon 15 oxen, or that four ſheep are equal to about one ox, in which we cannot err much; then 60 oxen were kept well for three months, or, which is the ſame thing, 15 for a whole year, for 38 l. 9 s.; and conſequently 20 oxen would coſt 51 l. 5 s. 4 d. which is not quite 3 l. more than the keeping of 20 cows would coſt in potatoes. Turnips, turnip-rooted cabbage, carrots, parſnips, and ſome other articles, by many experiments often repeated, have been found quite adequate to the ſame valuable purpoſes; at leaſt ſo far as to be more lucrative than meadow or paſture. Clover and rye-graſs are omitted, as having been long in general practice; but are in common very ſhort of the advantages which may be derived from the cultivation of the other articles recommended." Saintfoin is greatly recommended; but our author acknowledges that it makes but a miſerable appearance the firſt year, though afterwards he is of opinion that one acre of ſainfoin is equal to two of middling paſture-ground; for which reaſon he accuſes the farmer of intolerable indolence who does not cultivate ſo uſeful a plant. On this ſubject, however, we muſt remember, that the culture of ſainfoin is clogged with the loſs of one if not two crops; which may ſometimes be inconvenient, though afterwards it remains in perfection for no leſs than 20 years. The moſt advantageous method of raiſing it he ſuppoſes to be after potatoes. Thus it will thrive even upon very poor ground; as the culture and manure neceſſary for the potatoes both pulveriſe the ſoil and enrich it to a ſufficient degree.

17
Number of cattle fed from 12 acres of cabbages.

18
Great quantities of grain may be advantageouſly raiſed.

From theſe experiments and obſervations, therefore, it appears very probable at leaſt, that it is by no means againſt the intereſt of a farmer to cultivate large quantities of grain; and that he may even do this in a conſiſtency with raiſing as many cattle as he can have occaſion for. Some grounds, no doubt are naturally ſo fitted for paſture, that it would be too expenſive to force them into arable ground; but wherever this can be done, it ſeems proper always to have *as much* arable as poſſible, inſtead of *as little*, which Meſſrs Davis and Billingſley adviſe. Grain of different kinds, therefore, and particularly wheat, ought to be cultivated by a farmer to as great an extent as poſſible; though theſe different kinds can be determined only from the nature of the ſoil, and certain circumſtances ariſing from the ſituation of the place, for which no particular rules can be given. A view of the general practice of ſome of the principal counties in England, however, may perhaps be of ſome uſe to furniſh general directions for the farmer.

Sect. I. *Of the Cultivation of Wheat.*

19
Culture of wheat in Norfolk.

There is perhaps no part of Great Britain where this ſpecies of grain is cultivated to more perfection than in Norfolk. Mr Marſhal informs us, that the ſpecies raiſed in that country is called the *Norfolk red*, and weighs heavier than any other which has yet been introduced, though he owns that its appearance is much againſt the aſſertion, it being a long thin grain, reſembling rye more than well bodied wheat. About 16 or 20 years ago a new ſpecies was introduced, named the *Kentiſh coſh*; againſt which the millers were at firſt very much prejudiced, though this prejudice is now got over. A remarkable circumſtance reſpecting this grain is, that though upon its introduction into the country the *coſh* or huſk be perfectly white, yet ſuch is the power either of the ſoil or of the mode of cultivation to produce what the botaniſts call *varieties*, that the grain in queſtion is ſaid to loſe every year ſomewhat of the whiteneſs of its huſks, until they become at laſt equally red with thoſe of the former kind. The ſouthern and ſoutheaſtern parts of the country generally enjoy a ſtronger and richer ſoil than the more northerly, and therefore are more proper for the cultivation of that ſpecies of grain. In the northern parts are ſome farms of very light ſoil, where the farmers ſow only a ſmall quantity of wheat; and theſe light lands are called *barley farms*.

20
Succeſſion of crops, &c.

21
Rice balking, a particular mode of culture explained.

The greateſt part of the wheat in Norfolk is ſown upon a ſecond year's lay; ſometimes it is ſown upon a firſt year's lay; ſometimes on a ſummer-fallow; after peas, turnips, or buck harveſted or plowed under. The practice adopted by thoſe who are looked upon as ſuperior huſbandmen in the county of Norfolk is as follows. The ſecond year's lays having finiſhed the bullocks, and brought the flock-cattle and horſes thro' the fore-part of ſummer, and the firſt year's lays having been made ready to receive his flock, the farmer begins to break up his old land or lay-ground by a peculiar mode of cultivation named *rice-balking*, in which the furrow is always turned toward the unplowed ground, the edge of the coulter paſſing always cloſe by the edge of the flag laſt turned. This is done at firſt with an even regular furrow; opportunity being taken for performing the operation after the ſurface has been moiſtened by a ſummer-ſhower. In this ſtate his ſummer-lays remain until towards the end of harveſt, when he harrows and afterwards plows them acroſs the balks of the former plowing, bringing them now up to the full depth of the ſoil. On this plowing he immediately harrows the manure, and plows it in with a ſhallow furrow. The effects of the third plowing are to mix and effectually pulveriſe the ſoil and manure; to cut off and pulveriſe the upper ſurfaces of the furrows of the ſecond plowing; and thus, in the moſt effectual manner, to eradicate or ſmother the weeds which had eſcaped the two former ones. Thus it lies until the ſeed-time, when it is harrowed, rolled, ſown, and gathered up into ridges of ſuch width as the farmer thinks moſt proper. Thoſe of ſix furrows are moſt common, though ſome very good farmers lay their wheat-land into four-furrow, and others into ten-furrow ridges; "which laſt (ſays our author) they execute in a ſtyle much ſuperior to what might be expected from wheel-plows." They excel, however, in the ſix-furrow plowing; of which Mr Marſhal gives a particular account. When plowing in this manner, they carry very narrow furrows; ſo that a ſix-furrow ridge, ſet out by letting the off-horſe return in the firſt-made furrow, does not meaſure more than three feet eight or nine inches.

When wheat is cultivated after the firſt year's lay, the ſeed is generally ſown upon the flag or furrow turned over. After peaſe, one or two plowings are given; the other parts of the management being the ſame with that after the ſecond year's lay already mentioned. After buck harveſted he ſeldom gives more than two, and ſometimes but one, plowing. In the former caſe he ſpreads his manure on the ſtubble, and plows it in with a ſhallow furrow; harrows, rolls, ſows, and gathers up the ſoil into narrow work. The manure is in like manner ſpread on the ſtubble after once plowing, and the ſeed is then ſown among the manure; the whole plowed in together, and the ſoil gathered up into narrow ridges, as if it had undergone the operations of a fallow. An inconvenience attending this practice is, that the buck which is neceſſarily ſhed in harveſting ſprings up among the wheat, and becomes a weed to it, at the ſame time that the rooks, if numerous, pull up both buck and wheat, leaving ſeveral patches quite bare. This is obviated in a great meaſure by firſt plowing in the manure and ſelf-ſown buck with a ſhallow furrow; in conſequence of which the buck vegetates before the wheat.

It is likewiſe a favourite practice with the Norfolk farmers to raiſe wheat after buck plowed under. They plow under the buck by means of a broom made of rough buſhes fixed to the fore tackle of the plow between the wheels, which bears down the plant without lifting the wheels from the ground. Sometimes when the buck is ſtrong, they firſt break it down with a roller going the ſame way that the plough is intended to go; afterwards a good plowman will cover it ſo effectually that ſcarce a ſtalk can be ſeen. Sometimes the ſurface of the ground is left rough, but it is more eligible to harrow and roll it. The practice of ſummer-fallowing ſeldom occurs in Norfolk; though ſometimes, when the ſoil has been much worn down by cropping, and over run by weeds, it is eſteemed a judicious practice by many excellent huſbandmen, and the practice ſeems to be daily gaining ground. After turnips the ſoil is plowed to a moderate depth, and the ſeed ſown over the firſt plowing: but if the turnips be got in early, the weeds are ſometimes firſt plowed in with a ſhallow furrow, and the ſeed plowed under with a ſecond plowing, gathering the ſoil into narrow ridges.

22
Manuring the ground in Norfolk.

With regard to the manuring of the ground for wheat in Norfolk, that which has been recently clayed or marled is ſuppoſed to need no other preparation any more than that which has received 15 or 20 loads of dung and mould for turnips; and the firſt year's lay having been teathed in autumn, and the ſecond fed off. Where the ſoil is good, and the wheat apt to run too much to ſtraw, it is the practice of ſome judicious farmers to ſet their manure upon the young clover, thereby depriving the wheat in ſome degree of its rankneſs; but it is moſt common to ſpread it upon the broken ground; or if the ſeed be ſown upon the turned furrow, to ſpread it on the turf and plow it under; or to ſpread it on the plowed ſurface, and harrow it in with the ſeed as a top-dreſſing. A ſmaller quantity of manure is generally made uſe of for wheat than for turnips. From eight to ten cart-loads (as much as three horſes can conveniently draw) are reckoned ſufficient for an acre; three or four chaldrons of lime to one acre, or 40 buſhels of ſoot to the ſame quantity of ground; or about a ton of rape-cake to three acres.

23 Time of ſowing.

24 Of preparing the ſeed.

In this county they never begin to ſow wheat till after the 17th of October, and continue till the beginning of December, ſometimes even till Chriſtmas. They give as a reaſon for this late ſowing, that the wheat treated in this manner is leſs apt to run to ſtraw than when ſown earlier. The ſeed is generally prepared with brine, candied in the uſual manner with lime. The following method of preparing it is ſaid to be effectual in preventing the ſmut. "The ſalt is diſſolved in a very ſmall quantity of water, barely ſufficient for the purpoſe. The lime is ſlaked with this ſolution, and the wheat candied with it in its hotteſt ſtate, having been previouſly moiſtened with pure water." According to our author's obſervation, the crops of thoſe farmers who uſe this preparation are in general more free from ſmut than thoſe who make uſe of any other.

25 Method of ſowing.

26 Plowing the ſeed under furrow deſcribed.

The practice of dibbling or ſetting of wheat has not as yet become general throughout Norfolk, the common broad-caſt method being uſually followed, except on the Suffolk ſide of the county. Some few make uſe of dibbling and fluting rollers; but drilling is almoſt entirely unknown, notwithſtanding the great aptitude of ſoil for the practice. Plowing in the ſeed under furrow is the favourite mode of the Norfolk farmers, and is performed in the following manner: "the land having been harrowed down level, and the ſurface rendered ſmooth by the roller, the head-plowman (if at leiſure) marks out the whole piece in narrow ſlips of about a ſtatute rod in width. This he does by hanging up the plough in ſuch a manner, that no part of it except the heal touches the ground; and this makes a ſure mark for the ſeedſman, which he cannot by any means miſtake. In caſe the ploughs are all employed, the ſeedſman himſelf marks the ground, by drawing a piece of wood or other heavy body behind him." Mr Marſhall prefers this to the Kentiſh method of ſetting up ſticks in the form of a lane as being leſs liable to produce miſtakes.

27 Inſtrument for dibbling wheat deſcribed.

28 Objections againſt the practice of dibbling.

In thoſe places where wheat is dibbled they make uſe of iron inſtruments for the purpoſe. The acting part is an egg-ſhaped knob, ſomewhat larger than a pigeon's egg; the ſmaller end is the point of the dibble, the larger having a rod of iron riſing from it about half an inch ſquare, and two feet and an half long the head being received into a croſs piece of wood reſembling the cruch of a ſpade or ſhovel, which form the handle. The dibbler uſes two of theſe inſtruments, one in each had; and, bending over them, walks backward upon the turned furrows, making two rows of holes in each of them. Theſe rows are uſually made at the diſtance of four inches from each other; the holes being two and an half or three inches diſtant, viz, four in each length of the foot of the dibbler. The great art in making theſe lies in leaving them firm and ſmooth in the ſides, ſo that the looſe mould may not run in to fill them up before the ſeeds are depoſited. This is done by a circular motion of the hand and wriſt; making a ſemi-revolution every ſtroke; the circular motion beginning as the bit enters, and continuing until it is entirely diſengaged from the mould. The operation is not perfect unleſs the dibbles come out clean and wear bright. It is ſomewhat difficult to make the holes at equal diſtances; but more eſpecially to keep the two ſtraight and parallel to each other, ſome practice being required to guide the inſtrument in ſuch a manner as to correſpond exactly with each other; but though couples have been invented to remedy this inconvenience to keep them at a proper diſtance, the other method is ſtill found to be preferable. A middling workman will make four holes in a ſecond. One dibbler is ſufficient for three droppers whence one man and three children are called a *ſet*. The dibbler carries on three flags or turned furrows; going on ſome yards upon one of the outſide furrows, and returning upon the other, after which he takes the middle one: and thus keeps his three dibblers conſtantly employed, and at the ſame time is in no danger of filling up the holes with his feet. The droppers put in two or three grains of wheat into each hole; but much time and patience is neceſſary to teach them to perform the buſineſs properly and quickly. An expert dibbler will hole half an acre in a day; though one third of an acre is uſually reckoned a good day's work. The ſeed is covered by means of a buſh-harrow; and from one buſhel to ſix pecks is the uſual quantity for an acre. Notwithſtanding the advantages of ſaving ſeed as well as ſome others which are generally reckoned undeniable, it is aſſerted by ſome very judicious farmers, that dibbling of wheat on the whole is not really a profitable practice. It is particularly ſaid to be productive of weeds unleſs dibbled very thick which indeed may probably be the caſe, as the weeds are thus allowed a greater ſpace to vegetate in, Mr Marſhall himſelf is of opinion, that "the dibbling of wheat appears to be peculiarly adapted to rich, deep ſoils, on which three or four pecks dibbled early may ſpread ſufficiently for a full crop; whereas light, weak, ſhallow ſoils, which have lain two or three years, and have become graſſy, require an additional quantity of ſeed, and conſequently an addition of labour, otherwiſe the plants are not able to reach each other, and the graſſes of courſe find their way up between them, by which means the crop is injured and the ſoil rendered foul."

29 Culture of wheat in the midland diſtrict.

The ſame author has likewiſe given an account of the method of cultivating wheat practiſed in other Engliſh counties. In the midland diſtrict, including part of Staffordſhire, Derbyſhire, Warwick, and Leiceſterſhire, we are informed that the ſpecies uſually ſown is that called *Red lammas*, the ordinary red wheat of the kingdom; but of late a ſpecies named the *Eſſex dun*, ſimilar to the *Kentiſh white coſh* of Norfolk and the *Hertfordſhire brown* of Yorkſhire, have been coming into vogue. Cone-wheat, formerly in uſe in this diſtrict, is now out of faſhion. Spring wheat is cultivated with remarkable ſucceſs, owing principally to the time of ſowing; viz. the cloſe of April. Our author was informed by an excellent farmer in theſe parts, that by ſowing early, as in the beginning of March, the grain was liable to be ſhrivelled, and the ſtraw to be blighted; while that which was ſown towards the end of April, or even in the beginning of May, produced clean plump corn. At the time he viſited this country, however, it ſeemed to be falling into diſrepute;

pute; though he looks upon it, in ſome ſituations, eſpecially in a turnip-country, to be eligible. In the ordinary ſucceſſion in that part of the kingdom, wheat comes after oats: and there is perhaps nine tenths of the wheat in this diſtrict ſown upon oat ſtubble. Our author has alſo ſeen a few examples of wheat being ſown upon turf of ſix or ſeven year's laying; and ſeveral others on clover ley once plowed, as well as ſome after turnips. The beſt crops, however, produced in this, or perhaps in any other diſtrict, are after ſummer fallow. The time of ſowing is the month of October, little being ſown before Michaelmas; and in a favourable ſeaſon, little after the cloſe of the month. Much ſeed is ſown here without preparation. When any is made uſe of, it is the common one of brine candied with lime. The produce is very great, the medium being full three quarters per acre, ſometimes four or five; and one farmer, in the year 1784, had, on 50 acres of land together, no leſs than 45 buſhels per acre.

30 In the Vale of Glouceſter.

In the Vale of Glouceſter, the *cone wheat*, a variety of the *triticum turgidum*, is cultivated, as well as the lammas and ſpring wheats. It is not, however, the true cone wheat which is cultivated here, the ears being nearly cylindrical; but our author met with the true ſpecies in North Wiltſhire. Beans in this country are the common predeceſſors of wheat, and ſometimes peaſe; but here the farmers cultivate wheat upon every ſpecies of ſoil. The time of ſowing is in November and December, and the ſeed is thought to be ſown in ſufficient time if it is done before Chriſtmas. In this county it is thought that late ſown crops always produce better than thoſe which are ſown early; but Mr Marſhal accounts for this by the vaſt quantity of weeds the latter have to encounter, and which the late ſown crops eſcape by reaſon of the weakneſs of vegetation at that time of the year. The produce, however, throughout the vale of Glouceſter, is but very indifferent.—Setting of wheat is not practiſed, but hoeing univerſally.—In harveſting, Mr Marſhall obſerves that the grain is allowed to ſtand until it be unreaſonably ripe, and that it is bound up into very ſmall ſheaves. The practice of making double bands is unknown in this diſtrict; ſo that the ſheaves are no bigger than can be contained in the length of ſingle ſtraw. **31 Remarkably ſmall ſheaves.** The inconveniences of this method are, that the crop requires more time to ſtock, load and unload, and ſtack; the advantages are, that the trouble of making bands is avoided: and that if rainy weather happens to intervene, the ſmall ſheaves dry much ſooner than the large ones. Here the crop is cut very high, the ſtubble and weeds being mown off in ſwaths for litter ſoon after the crop is cut; and ſometimes ſold as high as 5s. per acre.—Mr Marſhall is at a loſs to account for the little quantity produced in this country; it being hardly poſſible to derive it from the nature of the ſoil, almoſt all of it being proper for the cultivation of the grain.

32 In the Cotſwold hills.

Among the Cotſwold hills of Glouceſter the lammas and cone wheats are ſown; and a new variety of the latter was raiſed not long ago by picking out a ſingle grain of ſeed from among a parcel. The body is very long and large, but not ſightly.—The Cotſwold hills are almoſt proverbial for early ſowing of wheat. The general rule is to begin plowing in July and ſowing the firſt wet weather in Auguſt; ſo that here the ſeed-time and harveſt of wheat coincide. If in conſequence of this early ſowing the blade becomes rank in autumn, it is ſupppoſed to be proper to eat it down by putting a large flock of ſheep upon it at once. Eating it in ſpring is conſidered as pernicious. **33 Inſtance of the good effects of hoeing wheat.** It is uſually weeded with ſpud-hooks; not hoed, as in the Vale. One inſtance, however, is mentioned by our author, in which a very thin crop full of ſeed-weeds was hoed in autumn with uncommon ſucceſs, occurred in the practice of a ſuperior manager in this diſtrict; as well as others in which wheat has been weeded in autumn with great advantage. **34 Of cutting mildewed wheat very green.** He alſo met with another well authenticated inſtance of the good effect of cutting mildewed wheat while very green. "A fine piece of wheat being lodged by heavy rains, and being ſoon after perceived to be infected with the mildew, was cut, though ſtill in a perfectly green ſtate: namely, about three weeks before the uſual time of cutting. It lay ſpread abroad upon the ſtubble until it became dry enough to prevent its caking in the ſheaf; when it was bound and ſet up in ſhocks. The reſult of this treatment was that the grain, though ſmall, was of a fine colour, and the heavieſt wheat which grew upon the ſame farm that ſeaſon; owing, no doubt, to the thinneſs of its ſkin. What appears much more remarkable, the ſtraw was perfectly bright, not a ſpeck upon it.—in this part of the country, the produce of wheat is ſuperior to that in the Vale; but Mr Marſhall is of opinion, that the ſoil is much more fit for barley than wheat.

35 Cultivation of wheat in Yorkſhire.

In Yorkſhire, though generally a graſs-land country, and where of conſequence corn is only a ſecondary concern, yet ſeveral kinds of wheat are cultivated, particularly *Zealand, Downy Kent, Common White, Hertfordſhire Brown, Yellow Kent, Common Red.* All theſe are varieties of winter wheat; beſides which they cultivate alſo the *ſpring* or *ſummer wheat.* **36 Obſervations on raiſing varieties of plants.** Here our author makes ſeveral curious obſervations concerning the raiſing of *varieties* of plants. "It is probable (ſays he), that time has the ſame effect upon the varieties of wheat and other grains as it has on thoſe of cultivated fruits, potatoes, and other vegetable productions. Thus, to produce an early pea, the gardener marks the plants which open into bloſſom among the moſt early kind he has in cultivation. Next year he ſows the produce of theſe plants, and goes over the coming crop in the manner he had done the preceding year, marking the earlier of this early kind. In a ſimilar manner new varieties of apples are raiſed, by chooſing the hardeſt leaved plants among a bed of ſeedlings riſing promiſcuouſly from pippins. Huſbandmen, it is probable, have heretofore been equally induſtrious in producing freſh varieties of corn; or whence the endleſs variety of winter wheats? If they be naturally one ſpecies, as Linnæus has deemed them, they muſt have been produced by climature, ſoil, or induſtry; for although nature ſports with individuals, the induſtry of man is requiſite to raiſe, eſtabliſh, and continue a permanent variety. The only inſtance in which I have had an oppportunity of tracing the *variety* down to the *parent individual*, has occurred to me in this diſtrict.—A man of acute obſervation, having, in a piece of wheat, perceived a plant of uncommon ſtrength and luxuriance, diffuſing its branches on every ſide, and ſetting its cloſely-ſurrounding neighbours

bours at defiance; marked it, and at harveſt removed it ſeparately. The produce was 15 ears, yielding 604 grains of a ſtrong-bodied liver-coloured wheat, different, in general appearance, from every other variety he had ſeen. The chaff was ſmooth, without awns, and of the colour of the grain; the ſtraw ſtout and reedy. Theſe 604 grains were planted ſingly, nine inches aſunder, filling about 40 ſquare yards of ground, on a clover ſtubble, the remainder of the ground being ſown with wheat in the ordinary way; by which means extraordinary trouble and deſtruction by birds were avoided. The produce was two gallons and an half, weighing 20½ lb. of prime grain for ſeed, beſides ſome pounds of ſeconds. One grain produced 35 ears, yielding 1235 grains; ſo that the ſecond years produce was ſufficient to plant an acre of ground.—What deters farmers from improvements of this nature is probably the miſchievouſneſs of birds; from which at harveſt it is ſcarcely poſſible to preſerve a ſmall patch of corn, eſpecially in a garden or other ground ſituated near an habitation; but by carrying on the improvement in a field of corn of the ſame nature, that inconvenience is got rid of. In this ſituation, however, the botaniſt will be apprehenſive of danger from the floral farina of the ſurrounding crop. But from what obſervations I have made, I am of opinion his fears will be groundleſs. No evil of this kind occurred, though the cultivation of the above variety was carried on among *white* wheat. But this need not be brought as an evidence; it is not uncommon here to ſow a mixture of red and white wheats together; and this, it is confidently aſſerted, without impairing even the colour of either of them. The ſame mode of culture is applicable to the improvement of varieties; which perhaps would be more profitable to the huſbandman than raiſing new ones, and more expeditious."

37
Preparation of wheat with arſenic.

In Yorkſhire a very ſingular preparation of ſeed-wheat prevails, *viz.* the ſteeping it in a ſolution of *arſenic*, as a preventative of ſmut. Marſhall was informed by one farmer, that he had made uſe of this preparation for 20 years with ſucceſs, having never during that long ſpace of time ſuffered any ſenſible injury from ſmut. Our author ſeems inclined to believe the efficacy of this preparation; but thinks there may be ſome reaſon to apprehend danger in the uſe of ſuch a pernicious mineral, either through the careleſſneſs of ſervants, or handling of the ſeed by the perſon who ſows it. The farmer abovementioned, however, during all the time he uſed it, never experienced any inconvenience either to himſelf, the ſeedſman, or even to the poultry; though theſe laſt, we ſhould have thought, would have been peculiarly liable to accidents from arſenicated ſeed.—The preparation is made by pounding the arſenic extremely fine, boiling it in water, and drenching the ſeed with the decoction. "In ſtrictneſs (ſays Mr Marſhall), the arſenic ſhould be levigated ſufficiently fine, to be taken up and waſhed over with water, reducing the ſediment until it be fine enough to be carried over in the ſame manner.—The uſual method of preparing the liquor is to boil one ounce of white arſenic, finely powdered, in a gallon of water, from one to two hours; and to add to the decoction as much water or ſtale urine as will increaſe the liquor to two gallons.—In this liquor the ſeed is, or ought to be, immerged, ſtirring it about in ſuch a manner as to ſaturate effectually the downy end of each grain.—This done, and the liquor drawn off, the ſeed is conſidered as fit for the ſeed-baſket, without being candied with lime, or any other preparation.—A buſhel of wheat has been obſerved to take up about a gallon of liquor. The price of arſenic is about 6d. per pound; which on this calculation will cure four quarters of ſeed. If no more than three quarters be prepared with it, the coſt will be only a farthing per buſhel; but to this muſt be added the labour of pounding and boiling. Nevertheleſs, it is by much the cheapeſt, and perhaps, upon the whole (adds Mr Marſhall), the beſt preparation we are at preſent acquainted with.—In this country it is believed that a mixture of wheat and rye, formerly a very common crop in theſe parts, is never affected with mildew; but our author does not vouch for the truth of this aſſertion.

Sect. II. *Barley.*

38
Cultivation of barley in Norfolk.

The county of Norfolk, according to Mr Marſhall, is peculiarly adapted to the cultivation of this grain, the ſtrongeſt ſoil not being too heavy, and the lighteſt being able to bear it; and ſo well verſed are the Norfolk farmers in the cultivation of it, that the barley of this county is deſired for ſeed throughout the whole kingdom.—It is here ſown after wheat or turnips; and in ſome very light lands it is ſown after the ſecond year's lay.—After wheat, the ſeed time of the latter being finiſhed, and the ſtubble trampled down with bullocks, the land is ploughed with a ſhallow furrow for a winter-fallow for barley. In the beginning of March the land is harrowed and croſs-ploughed; or if it be wet, the ridges are reverſed. In April it receives another ploughing lengthways; and at ſeed time it is harrowed, rolled, ſowed, and the ſurface rendered as ſmooth and level as poſſible.—After turnips the ſoil is broken up as faſt as the turnips are taken off; if early in winter by *rice-balking*, a practice already explained*; but if late, by a plain ploughing. It is common, if time will permit, to plough three times; the firſt ſhallow, the ſecond full, and the third a mean depth; with which laſt the ſeed is ploughed in. Sometimes, however, the ground is ploughed only once, and the ſeed ſown above; but more frequently in three ploughings, though perhaps the farmer has not above a week to perform them in.—After lay, the turf is generally broken by a winter fallow, and the ſoil treated as after wheat.

This grain is ſeldom manured for, except when ſown after lay, when it is treated as wheat. No manure is requiſite after turnips or wheat, if the latter has been manured for. If not, the turnip-crop following immediately, the barley is left to take its chance, unleſs the opportunity be embraced for winter-marling.

Little barley is ſown by the Norfolk farmers before the middle of April, and the ſeed time generally continues till the middle of May; though this muſt in ſome meaſure depend on the ſeaſon; "which (ſays Mr Marſhall) is more attended to in Norfolk than perhaps in all the world beſide." In the very backward ſpring of 1782, barley was ſown in June with ſucceſs. No preparation is uſed. It is all ſown broad-caſt, and almoſt all under furrow; that is, the ſurface having been ſmoothed by the harrow and roller, the ſeed is

*See n° 31.

ſown and ploughed under with a ſhallow furrow; but if the ſeaſon be wet, and the ſoil cold and heavy, it is ſometimes ſown above; but if the ſpring be forward, and the laſt piece of turnips eaten off late, the ground is ſometimes obliged to be ploughed only once, and to be ſown above; though in this caſe Mr Marſhall thinks it the moſt eligible management, inſtead of turning over the whole thickneſs of the ſoil, to *two-furrow* it, and ſow between. This is done by only ſkimming the ſurface with the firſt plough, ſowing the ſeed upon this, and then covering it with the bottom-furrow brought up by the ſecond plough. Three buſhels are uſually ſufficient for an acre.

The barley, as well as the wheat, in Norfolk, is allowed to ſtand till very ripe. It is univerſally mown into ſwath, with a ſmall bow fixed at the heel of the ſcythe. If it receive wet in the ſwath in this country, it is not turned, but *lifted*; that is, the heads or ears are raiſed from the ground, either with a fork or the teeth of a rake, thereby admitting the air underneath the ſwaths; which will not fall down again to the ground ſo cloſe as before, ſo that the air has free acceſs to the under ſide: and this method of lifting is ſuppoſed not to be inferior to that of turning, which requires more labour, beſides breaking and ruffling the ſwaths.

39 In the Vale of Glouceſter.

In the Vale of Glouceſter the quantity of barley cultivated is very inconſiderable; the only ſpecies is the common long-eared barley, *hordeum zeocriton*. In this country the grain we ſpeak of is uſed, on the every year's lands, as a cleanſing crop. It is ſown very late, *viz.* in the middle or end of May; ſometimes the beginning or even the middle of June. The reaſon of this is, that the people of the Vale think, that if a week or ten days of fine weather can be had for the operation of harrowing out couch, and if after this a full crop of barley ſucceed, eſpecially if it ſhould fortunately take a reclining poſture, the buſineſs of fallowing is effectually done, inſomuch that the ſoil is cleaned to a ſufficient degree to laſt for a number of years. A great quantity of ſeed is made uſe of, *viz.* from three to four buſhels to an acre; under the idea, that a full crop of barley, eſpecially if it lodge, ſmothers all kinds of weeds, couch-graſs itſelf not excepted. Our author acknowledges this effect in ſome degree, but does not recommend the practice. "If the land (ſays he) be tolerably clean, and the ſeaſon favourable, a barley fallow may no doubt be of eſſential ſervice. But there is not one year in five in which even land which is tolerably clean can be ſown in ſeaſon, and at the ſame time be much benefited by it for future crops." The barley in this country is all hand-weeded. It is harveſted looſe, mown with the naked ſcythe, lies in ſwath till the day of carrying, and is cocked with common hay forks. The medium produce is three quarters per acre. Its quality is preferable to that of the hill-barley.

40 In Cotſwold.

The common long-eared ſpecies is ſown among the Cotſwold hills. It is ſown in the latter end of March and beginning of April, in the quantity of three buſhels to an acre, producing from 20 buſhels to four quarters to an acre; which "(ſays our author) is a low produce. It muſt be obſerved, however, that this produce is from land deficient in tillage; and that barley delights in a fine pulverous tilth."

41 In the Midland diſtrict.

In the Midland diſtrict they cultivate two ſpecies of barley, *viz.* the *zeocriton* or common long-eared, and the *diſtichon* or ſprat barley; the latter not being of more than 50 years ſtanding, but the former of much older date. The ſprat is the more hardy, and requires to be more early ſown; but the long ear yields the better produce. It ſucceeds wheat and turnips; but on the ſtrong lands of this diſtrict, the crop after wheat is much leſs productive, as well as leſs certain, than after turnips; which circumſtance is likewiſe obſerved in Norfolk. It is ſometimes alſo ſown with ſucceſs upon turf. When ſown after wheat, the ſoil is winter-fallowed by three ploughings; the firſt lengthways in November; the ſecond acroſs in March; the laſt, which is the ſeed-ploughing, lengthways. Between the two laſt ploughings the ſoil is harrowed, and the twitch ſhaken out with forks; after which it is left looſe and light to die upon the ſurface, without being either burnt or carried off. After turnips the ſoil has commonly three ploughings; the reaſon of which is, that the turnips being commonly folded off with ſheep, the ſoil, naturally of a cloſe texture, receives a ſtill greater degree of compactneſs, which it is proper to break down, and render it porous. The ſeed-time is the two laſt weeks of April and the firſt of May; from two buſhels and a half to three buſhels an acre, ſometimes even as much as four buſhels; the produce very great, ſometimes as high as ſeven or even eight quarters an acre; but the medium may be reckoned from four to four and an half quarters. Mr Marſhall remarks, that the culture of barley is extremely difficult. "Something (ſays he) depends on the nature of the ſoil, much on the preparation, much on the ſeaſon of ſowing, and much on harveſting. Upon the whole, it may be deemed, of corn crops, the moſt difficult to be cultivated with certainty."

42 Culture of barley difficult.

43 In Yorkſhire.

In Yorkſhire there are four kinds of barley cultivated, *viz.* the *zeocriton* or long-eared; the *diſtichon* or ſprat; the *vulgare*, big, four-rowed or ſpring-barley; and the *hexaſtichon*, ſix-rowed or ſpring-barley. The firſt and third ſorts are principally cultivated; the winter-barley is as yet new to the diſtrict. Battledoor barley was formerly very common, but is now almoſt entirely diſuſed. Mr Marſhall obſerves, that leſs than a century ago, barley was not ſaleable until it was malted; there were neither maltſters nor public houſes, but every farmer malted his own grain, or ſold it to a neighbour who had a malt-kiln. Brakes cut from the neighbouring commons were the fuel commonly uſed upon this occaſion, and a certain day for cutting them was fixed, in order to prevent any one from taking more than his ſhare. The caſe is now totally reverſed; even public malt-houſes being unknown, and the buſineſs of malting entirely performed by maltſters, who buy the barley from the farmer, and ſell him what malt he may want for his family.

SECT. III. *Oats*.

44 Norfolk cultivation of oats.

In Norfolk this kind of grain is much leſs cultivated than barley; and the only ſpecies obſerved by Mr Marſhall is a kind of white oat, which grows quickly, and ſeems to be of Dutch extraction. They are cultivated occaſionally on all kinds of ſoils; but more eſpecially on cold heavy land, or on very light, unproductive,

ductive, heathy, ſoils. They moſt frequently ſucceed wheat or lay-ground barley: "but (ſays our author) there are no eſtabliſhed rules reſpecting any part of the culture of this time-ſerving crop." The culture of the ground is uſually the ſame with that of barley; the ground generally undergoing a winter fallow of three or four ploughings, though ſometimes they are ſown after one ploughing. They are more commonly ſown above furrow than barley. The ſeed-time is made ſubſervient to that of barley, being ſometimes ſooner and ſometimes later than barley ſeed-time: and Mr Marſhall obſerves, that he has ſometimes ſeen them ſown in June; it being obſervable, that oats ſown late ripen earlier than barley ſown at the ſame time. The quantity of ſeed in Norfolk is from four to five buſhels per acre; but he does not acquaint us with the produce.

45 Method of ploughing down oats.

He mentions a very ſingular method of culture ſometimes practiſed in this county, *viz.* ploughing down the oats after they begin to vegetate, but before they have got above ground; which is attended with great ſucceſs, even though the ground is turned over with a full furrow. By this method weeds of every kind are deſtroyed, or at leaſt checked in ſuch a manner as to give the crop an opportunity of getting above them; and the poroſity communicated to the ſoil is excellently well adapted to the infant-plants of barley; which probably might frequently receive benefit from this operation.

46 Wild oats a weed in the Vale of Glouceſter.

In the Vale of Glouceſter, Mr Marſhall obſerves, that the wild oat is a very troubleſome weed, as well as in Yorkſhire; and he is of opinion, that it is as truly a native of Great Britain as any other arable weed, and is perhaps the moſt difficult to be extirpated. It will lie a century in the ſoil without loſing its vegetative quality. Ground which has lain in a ſtate of graſs time immemorial, both in Glouceſter and Yorkſhire, has produced it in abundance on being broken up. It is alſo endowed with the ſame ſeemingly inſtinctive choice of ſeaſons and ſtate of the ſoil as other ſeeds of weeds appear to have. Hence it is exceſſively difficult to be overcome; for as it ripens before any crop of grain, it ſheds its ſeed on the ſoil, where the roughneſs of its coat probably ſecures it from birds. The only methods of extirpating this plant are fallowing, hoeing, and handweeding, where the laſt is practicable, after it has ſhot its panicle.

47 Oats not cultivated in the Vale of Glouceſter.

No oats are cultivated in the Vale of Glouceſter; though the wild oat grows every where as already ſaid. Mr. Marſhall is of opinion that it is better adapted to oats than to barley. The reaſon he aſſigns for the preference given to the latter is, that in this part of the country the monks were formerly very numerous, who probably preferred *ale* to oaten cake.—He now, however, recommends a trial of the grain on the ſtronger cold lands in the area of the Vale, as they ſeldom can be got ſufficiently fine for barley. The fodder from oats he accounts much more valuable than that from barley to a dairy country; and the grain would more than balance in quantity the comparative difference in price.

48 Cultivation in the Midland diſtrict.

In the midland diſtrict the *Poland oat*, which was formerly in vogue, has now given place to the *Dutch* or *Friezeland* kind. It is conſtantly ſown after turf; one ploughing being given in February, March, or April. The ſeed-time is the latter end of March and beginning of April, from four to ſeven buſhels an acre; the produce is in proportion to the ſeed, the medium being about ſix quarters.

49 In Yorkſhire.

In Yorkſhire the Friezeland oats are likewiſe preferred to the Poland, as affording more ſtraw, and being thinner ſkinned than the latter. The *Siberian*, or *Tartarian* oat, a ſpecies unnoticed by Linnæus, is likewiſe cultivated in this country: the *reed* oat is known, but has not yet come into any great eſtimation. The grain is light, and the ſtraw too ready to be affected by cattle.

Oats are particularly cultivated in the weſtern diviſion of the Vale of Yorkſhire; where the ſoil is chiefly a rich ſandy loam, unproductive of wheat. Five or ſix buſhels, or even a quarter of oats, are ſometimes ſown upon an acre; the produce from ſeven to ten quarters.

50 Singular method of threſhing.

—In this country they are threſhed in the open air, and frequently even upon the bare ground, without even the ceremony of interpoſing a cloth. The reaſons aſſigned for this ſeemingly ſtrange practice are, that if pigs and poultry be employed to eat up the grain which eſcapes the broom, there will be little or no waſte. Here the market is always very great for new oats, the manufacturing parts of Weſt Yorkſhire uſing principally oat-bread. The only objection to this practice is the chance of bad weather; but there is always plenty of ſtraw to cover up the threſhed corn, and it is found that a little rain upon the ſtraw does not make it leſs agreeable to cattle.

Bath Papers, vol. iv. p. 281

51 Experiment on black oats.

In an experiment made by Mr Bartley near Briſtol, upon black oats, we are informed that he had the prodigious increaſe of $94\frac{1}{4}$ Wincheſter buſhels from four on the acre: the land was a deep, mellow, ſandy loam. It had carried potatoes the former year, and received one ploughing for a winter fallow. Another ploughing was given it in February, and the ſeed was ſown on the 27th and 28th of the month. The ſucceſs of the experiment was ſuppoſed to be owing partly to the early ſowing and partly to a good deep tillage.

Sect. IV. *Peaſe.*

In the Bath Papers, vol. i. p. 148. we have an account of the ſucceſs of an experiment by Mr Pavier near Taunton, on ſowing peaſe in drills, a method mentioned under the article Agriculture, n° 150.

52 On ſetting peaſe in drills.

The ſcale on which this experiment was made, however, being ſo ſmall, it would perhaps be raſh to infer from it what might be the event of planting a large piece of ground in the ſame manner. The ſpace was only 16 ſquare yards, but the produce ſo great, that by calculating from it, a ſtatute acre would yield 600, or at the leaſt 500 pecks of green peaſe at the firſt gathering; which, at the high price they bore at that time in the county about Taunton, *viz.* 16d. per peck, would have amounted to 33l. 6s. 8d. On this the Society obſerve, that though they doubt not the truth of the calculation, they are of opinion, that ſuch a quantity as 500 or 600 pecks of green peaſe would immediately reduce the price in any country market. "If the abovementioned crop (ſay they were ſold only at nine pence per peck, the farmer would be well paid for his trouble." In a letter on the drill huſbandry by Mr Whitmore, for which the thanks of the ſociety were returned, he informs us, that drilled peaſe muſt not be ſown too thin, or they will always be foul; and in an experiment of this kind, notwithſtanding careful hoeing, they turned out ſo foul, that the produce was only eight buſhels to the acre.—From an experiment related in the 5th volume of the ſame work, it appears that peaſe, however meliorating they may be to the ground at firſt, will at the laſt totally exhauſt it, at leaſt with regard to themſelves. In this experiment they were ſown on the ſame ſpot for ten years running. After the firſt two years the crop became gradually leſs and leſs, until at laſt the ſeed would not vegetate, but became putrid. Strawberries were then planted without any manure, and yielded an excellent crop.

53 Peaſe muſt not be ſown too often on the ſame ſpot.

On the Norfolk culture of peaſe*, Mr Marſhall makes two obſervations. "Lays are ſeldom ploughed more than once for peaſe; and the ſeed is in general dibbled in upon the flag of this one ploughing. But ſtubbles are in general broken by a winter-fallow of three or four ploughings; the ſeed being ſown broadcaſt, and ploughed in about three inches deep with the laſt ploughing."—In the Vale of Glouceſter they are planted by women, and hoed by women and children, once, twice, and ſometimes thrice; which gives the crop, when the ſoil is ſufficiently free from root-weeds, the appearance of a garden in the ſummer time, and produces a plentiful crop in harveſt. The diſtance between the rows varies from 10 to 14 inches, but 12 may be conſidered as the medium; the diſtance in the rows two inches. In the Cheltenham quarter of the diſtrict, they ſet the peas not in continued lines, but in clumps; making the holes eight or ten inches diſtant from one another, putting a number of peaſe into each hole. Thus the hoe has undoubtedly greater freedom; all the diſadvantage is, that in this caſe the ſoil is not ſo evenly and fully occupied by the roots as when they are diſpoſed in continued lines.—In Yorkſhire it is common to ſow beans and grey peaſe together, under the name of *blendings*; and ſometimes fitches (probably, ſays Mr Marſhall, a gigantic variety of the *ervum lens*) are ſown among beans. Such mixtures are found to augment the crop, and the different ſpecies are eaſily ſeparated by the ſieve.

54 Mr Marſhall's obſervations.

Theſe are the moſt remarkable particulars concerning the culture of corn not taken notice of under AGRICULTURE: but beſides that kind of vegetables called GRAIN, there is a number of others very important both for the uſe of men and cattle, of which we muſt now treat particularly.

SECT. V. *Potatoes.*

THESE, next to the different kinds of grain, may be looked upon as the crop moſt generally uſeful for the huſbandman; affording not only a moſt excellent food for cattle, but for the human ſpecies alſo; and are perhaps the only ſubſtitute that could be uſed for bread with any probability of ſucceſs. In the anſwer by Dr Tiſſot to M. Linguet already mentioned, the former objects to the conſtant uſe of them as food; not becauſe they are pernicious to the body, but becauſe they hurt the faculties of the mind. He owns, that thoſe who eat maize, potatoes or even millet, may grow tall and acquire a large ſize; but doubts if any ſuch ever produced a literary work of merit. It does not, however, by any means appear, that the very general uſe of potatoes in Britain has at all impaired either the health of body or vigour of mind of its inhabitants. The queſtion then, as they have already been ſhown to be an excellent food for cattle, comes to be merely with regard to the profit of cultivating them; and this ſeems already to be ſo well determined by innumerable experiments, as well as by the general practice of the country, that no room appears left for doubt. In the Tranſactions of the Society for the encouragement of Arts, a number of experiments are related by Mr Young on that kind called the *cluſtered* or *hog potato*, which he ſtrongly recommends as food for the poor, in preference to the kidney or other more expenſive kinds. The following is the reſult of the moſt remarkable of his experiments.

55 Are not prejudical to mankind.

56 Mr Young's experiments on the cluſtered potato.

In the firſt week of March 1780, two acres and a quarter of barley ſtubble were ſown with the cluſter potato, which appeared on the 23d of May. A ſharp froſt on the 7th of June turned them as black as they uſually are by the froſts of November and December. In time, however, they recovered; and by the end of October produced 876 buſhels from the 2¼ acres; which, when cleaned, were reduced to 780, or 350 buſhels per acre; thus affording, when valued only at 6d. per buſhel, a clear profit of 7l. 14s. 4d. per acre. This experiment, however, in his opinion, would have been ſtill more profitable, had it not been for the following circumſtances. 1. The ſoil was not altogether proper. 2. The crop was grievouſly injured by the froſt already mentioned, which, in our author's opinion, retarded the growth about ſix weeks. 3. The dung was not of his own raiſing, but purchaſed; which cannot but be ſuppoſed to make a great difference, not only on account of the price, but likewiſe of the quality, as happened to be the caſe at preſent. He is of opinion, however, that potatoes, at leaſt this kind of them, are an exhauſting crop. Having ſown the field after this large crop of potatoes with wheat, his neighbours were of opinion that it would be too rank; but ſo far was this from being the caſe, that the wheat ſhowed not the leaſt ſign of luxuriance, nor the leaſt ſuperiority over the parts adjacent which were ſown without dung. He was willing to account for this by the poverty of the dung, and the ſevere cropping which the ground had undergone while in the poſſeſſion of the former tenant. In another experiment, however, in which the ground had been likewiſe exhauſted by ſevere cropping, the ſucceeding crop of wheat ſhowed no luxuriance; ſo that the former ſuſpicion of the exhauſting quality of the cluſter-potato was rather confirmed. The ground was a fine turnip loam; but though the produce was even greater than in the former caſe, viz. 356 buſhels from an acre, the profit was much leſs, &c. only 4l. 15s. 6d. An acre of ley-ground was ſown at the ſame time with the turnip-loam, but the produce from it was only 200 buſhels. Mr Young ſuppoſes that the produce would have been greater if the potatoes had been planted with an iron dibble, as the turf, in ploughing, lay too heavy upon the ſeed. A few rows of other potatoes, planted along with the cluſtered kind, did not vegetate at all; which ſhows that the latter have a powerful vegetative faculty.

57 Experiments on a larger ſcale.

Having ſucceeded ſo well with his experiments on this kind of potato hitherto, Mr Young determined to

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† See *Agriculture*, nº 150.

try the culture of them upon a larger ſcale; and therefore, in the year 1782, ſowed 11 acres: but being obliged to commit the care of ſowing them to an ignorant labourer, his unſkilfulneſs, together with the exceſſive cold and moiſture of that ſeaſon, ſo diminiſhed the produce, that he had only a ſingle acre out of the whole. This produced 180 buſhels, which yielded of clear profit 4l. 2s. 6d. From this experiment he draws the following concluſions: 1. "That the poor loam, on which theſe potatoes were ſown, will yield a crop of cluſter-potatoes, though not of any other kind. 2. That the manure for potatoes ought to be carted and ſpread upon all ſoils inclinable to wet before the planting ſeaſon, either in autumn preceding, or elſe during a hard froſt." In 1782 he ſucceeded ſtill worſe; for having that year ſown three acres and a half, the profit did not exceed 11s. 4d. per acre. The produce was about 224 buſhels per acre. He gives two reaſons for the failure of this crop: 1. The cluſtered-potato thrives beſt in wet years; but the ſummer of 1783 was dry and hot. 2. The ſpring froſt, by interrupting the hoeing, not only greatly raiſed the expences, but very much injured the crop by encouraging the growth of weeds. Barley was ſown after the laſt crop, and produced well: ſo that our author thinks the potatoes ſeem to be a better preparation for ſpring corn than wheat. His experiment in 1784 produced a clear profit of 2l. 0s. 4d.; the produce being 250 buſhels per acre. Still however, an error was committed, by employing an old man and woman to cut the ſets; by whoſe unſkilfulneſs there were many great gaps among the potatoes as they came up; ſo that, on the whole, he reckons that he thus loſt from 500 to 800 buſhels. On the whole, however, his opinion is favourable to the cluſter-potato. "With ſmall crops (ſays he), and at the low rate of value which is produced by conſuming them at home, they are clearly proved to be a crop which will pay the expence of manuring, and very ample tillage and hoeing. This is, after all, the chief object of modern huſbandry; for if a man can rely upon this potato for the winter conſumption of his yard in fattening or keeping hogs, in feeding his horſes, and fattening his bullocks, he has made one of the greateſt acquiſitions that can be deſired; ſince he can do all this upon land much too ſtiff and wet for turnips, houſes his crops before the winter rains come on; and conſequently without doing any of that injury to his land which the turnip culture is known to entail, and from which even cabbages are not free. Thoſe who know the importance of winter-food on a turnip farm, cannot but admit the magnitude of this object on wet ſoils."

58
Concluſion favourable to the cultivation of this kind.

59
Mr Marſhall's remarks.

Mr Marſhall, in his Rural Œconomy of Yorkſhire, has ſeveral very intereſting remarks on the potato. Its varieties, he ſays, are endleſs and tranſitory. The rough-ſkinned Ruſſia potatoe, which was long a favourite of the Yorkſhire farmers, he is of opinion, has now no longer an exiſtence more than many others which flouriſhed for a time. "There is ſome reaſon to believe (ſays he) that the diſeaſe which has of late years been fatal to the potato-crop in this and in other diſtricts, under the name of CURLED TOPS, has ariſen from too long a continuance of declining varieties. Be this as it may, it appears to be an eſtabliſhed opinion here, that *freſh varieties*, raiſed from ſeed, are not liable to that diſeaſe." Our author, however, does not look upon this to be a fact abſolutely eſtabliſhed; though one inſtance fell under his obſervation, in which its removal was in all probability owing to the introduction of new varieties. It made its appearance between 40 and 50 years ago, and ſpread in ſome degree over the whole kingdom. In ſome places it continued but a ſhort time, ſo that its effects are almoſt forgotten. It is ſeldom obvious at the firſt coming up of the plant, but attacks them as they increaſe in ſize; the entire top becoming dwarfiſh and ſhrivelled as if affected by drought or loaded with inſects: they nevertheleſs live and increaſe, though ſlowly, in ſize; but the roots are unproductive. Some crops have been almoſt wholly deſtroyed by this diſeaſe. In Yorkſhire the Morelands are in a manner free from it, but the Vale is in ſome meaſure infected. Plants procured from the Morelands remain free from it in the Vale the firſt year; but, being continued, become liable to the diſeaſe. Where the attack has been partial, weeding out the diſeaſed plants as they failed, is ſaid to have had a good effect; and it is ſaid the Morelanders got rid of the diſeaſe by this means.

60
On the curl.

61
Method of raiſing varieties from ſeed.

In Yorkſhire, ſome intelligent huſbandmen are acquainted with the method of raiſing potatoes from ſeed; which is as follows. "In autumn, when the apples are beginning to fall ſpontaneouſly, they are gathered by hand, and preſerved among ſand until the ſpring, when they are maſhed among the ſand or among freſh mould; ſeparating the ſeeds and mixing them evenly with the mould. As ſoon as the ſpring froſts are judged to be over, they are ſown in fine garden mould; and as faſt as the plants get into rough leaf, and are ſtrong enough to be handled without injury, they are tranſplanted into another bed of rich mould in rows, which are kept clean during ſummer. In autumn, bunches of ſmall potatoes are found at the roots of theſe plants; varying in ſize, the firſt year from an hazel-nut to that of a crab. Theſe being planted next ſpring, produce potatoes of the middle-ſize; but they do not arrive at their fulleſt bulk until the third or fourth year. Where the uſe of the ſtove or the garden frame can be had, this proceſs may be ſhortened. The ſeeds being ſown within either of theſe early in the ſpring, the plants will be fit to be planted out as ſoon as the froſts are gone; by which means the ſize of the roots will be much increaſed the firſt year, and will in the ſecond riſe early to perfection."

62
Dr Anderſon's experiments.

In the 4th volume of the Bath Papers, Dr Anderſon relates ſome experiments made on potatoes raiſed from ſeed. The firſt year they were of different ſizes, from a pigeon's egg to that of a ſmall pea. On planting theſe next year, it was invariably found, that the largeſt potatoes yielded the largeſt crop; and the ſame happened the third, when a few ſhowed bloſſom; but not even theſe had bulbs equal to what would have been produced by very large potatoes. Whence he concludes, that it is impoſſible to aſſign any time in which theſe ſeedling potatoes will arrive at what is called *perfection*; but that it muſt depend very much on the nature of the ſoil and the culture beſtowed upon them. From the practice of the Yorkſhire farmers, however, and even from the experiments of the Doctor himſelf, it is evident, that potatoes raiſed in

Potatoes.

63 Whether potatoes degenerate.

this way will at laſt grow to the uſual ſize, as during the three years in which his experiments were continued they conſtantly increaſed in bulk. Dr Anderſon likewiſe contends, that there is no reaſon for ſuppoſing that potatoes raiſed from bulbs in the ordinary way degenerate, or require to be renewed by ſeminal varieties; and he inſtances the univerſal practice of Britain and Ireland for a great number of years paſt. But this may be accounted for from an obſervation of Mr Marſhall's that varieties of potatoes, like thoſe of corn, are partial to particular ſoils and ſituations. Hence, by tranſplanting all the different varieties of potatoes into all poſſible ſoils and ſituations, as has been done within this laſt century in the iſlands of Britain and Ireland, theſe varieties have continued for a much longer time than they would otherwiſe have done. In Yorkſhire, Mr Marſhall tells us, that "the old favorite ſorts were driven until ſome of the individual plants barely produced their ſeed again." It is evident, therefore, that there is a neceſſity from time to time of renewing them from ſeed; though it deſerves well to be conſidered whether it would not be more eligible to chooſe the ſeed from a plant in full vigour than from that which is ſo far degenerated that it can ſcarce produce its ſeed. "Potatoes raiſed from ſeed (ſays Mr Marſhall) are a miſcellany of endleſs varieties. Sometimes theſe varieties are planted miſcellaneouſly; ſometimes particular varieties are ſelected. In ſelecting varieties from ſeedling potatoes, two things are to be attended to; the intrinſic quality of the potato, and its productiveneſs. If theſe two deſireable properties can be found in one plant, the choice is determined. To this ſpecies of attention and induſtry we are indebted for the many valuable kinds which have been and now are diſtributed throughout the iſland. It is obſervable, however, the varieties of potatoes, like thoſe of corn, are partial to particular ſoils and ſituations. Hence the propriety of huſbandmen raiſing potatoes from ſeed; as by this means they obtain, with a degree of moral certainty, a ſort adapted to their own particular ſoils and ſituations. Whoever has attended cloſely to the work of taking up potatoes, muſt have obſerved the great inequality in the productiveneſs of individual plants. The difference in the produce of adjoining roots, where no diſparity of ſoil can influence, will ſometimes be three or four fold. Hence it is evident, that each variety has its *ſub varieties*; through whoſe means it can hardly be doubted the parent variety may be improved, and its continuance be prolonged. Thus the farmer has another mean in his power of improving the quality and productiveneſs of his potatoe-crop, by improving varieties; or, in other words, ſelecting ſub-varieties, ſuperiorly adapted to his ſoil and ſituation."

With regard to the proper mode of cultivating this valuable root, it is ſo fully explained under the article AGRICULTURE, n° 158 *et ſeq.* that nothing farther ſeems requiſite to be ſaid upon it in this place. We ſhall therefore proceed to

SECT. VI. *Of Carrots.*

THESE have been greatly recommended as food for cattle, and in this reſpect bid fair to rival the potato; though, with regard to the human ſpecies they are far inferior. The profit attending the cultivation of them, however, appears to be much more doubtful than that of potatoes. Mr Arthur Young informs us, that from *Norden's Surveyor's Dialogue*, publiſhed in 1600, it appears, that carrots were commonly cultivated at that time about Orford in Suffolk, and Norwich in Norfolk; and he remarks, that the tract of land between Orford, Woodbridge, and Saxmundam, has probably more carrots in it than all the reſt of the kingdom put together." In 1779, few farmers in theſe parts had leſs than five or ſix acres: many from 10 to 20; and one had 36 acres: the ſtraight, handſome, and clean roots were ſent at 6d. *per* buſhel to London; the reſt being uſed at home, principally as food for horſes. In other counties, he obſerves, the culture of carrots has not extended itſelf; that ſome have begun to cultivate them in place of turnips, but have ſoon deſiſted; ſo that the culture ſeems in a manner ſtill confined to the angle of Suffolk, where it firſt began. In attempting to inveſtigate the cauſe of this general neglect, he obſerves, that "the charge of cultivation is not ſo great as is commonly imagined, when managed with an eye to an extenſive culture, and not a confined one for one or two particular objects." Two acres which our author had in carrots coſt L. 3 : 17 : 6 *per* acre, including every expence; but had not the ſummer been dry, he obſerves, that his expences might have been much higher; and when he tried the experiment 15 years before, his expences, through inadvertence, ran much higher. His difficulty this year aroſe chiefly from the *polygonum aviculare*, the predominant weed, which is ſo tough that ſcarcely any hoe can cut it. Some acres of turnips which he cultivated along with the carrots were all eaten by the fly; but had they ſucceeded, the expence of the crop would have been 18s. 5d. leſs per acre than the carrots. "But (adds our author) if we call the ſuperiority of expence 20s. an acre, I believe we ſhall be very near the truth: and it muſt at once be apparent that the expence of 20s. *per* acre cannot be the cauſe of the culture ſpreading ſo little; for, to anſwer this expence, there are favourable circumſtances, which muſt not be forgotten. 1. They (the carrots) are much more impenetrable to froſt, which frequently deſtroys turnips. 2. They are not ſubject to the diſtempers and accidents which frequently affect turnips; and they are ſown at a ſeaſon when they cannot be affected by drought, which frequently alſo deſtroys turnips. 3. They laſt to April, when ſtock, and eſpecially ſheep-farmers are ſo diſtreſſed, that they know not what reſource to provide. 4. The culture requiſite for turnips on a ſandy ſoil, in order to deſtroy the weeds, deſtroys alſo its tenacity, ſo that the crop cannot thrive; but with carrots the caſe is otherwiſe.—Hence it appears, that the reaſon why the cultivation of carrots is ſtill ſo limited, does not ariſe from the expence, but becauſe the value is not aſcertained. In places where theſe roots can be ſent to London, or ſold at a good price, the tops being uſed as food for cattle, there is not the leaſt doubt that they are profitable; and therefore in ſuch places they are generally cultivated: but from the experiments as yet laid before the public, a ſatisfactory deciſive knowledge of the value is not to be gained. The moſt conſiderable practice, and the only one of common farmers upon a large ſcale, is that of the ſands of Woodbridge: but here they have the benefit of a London market, as already

Carrots.

Bath Papers, vol ii. p. 1.

64 Much cultivated in Suffolk and part of Norfolk.

65 Why the culture has not extended itſelf.

66 Inferiority of carrots to turnips.

67 Difficulty of aſcertaining the value.

already mentioned. Amongſt thoſe whoſe experiments are publiſhed, Mr Billingſley ranks foremoſt. Here again the value of carrots is rather depreciated than advanced; for he raiſed great crops; had repeated experience upon a large ſcale of their excellence in fattening oxen and ſheep; feeding cows, horſes, and hogs; and keeping ewes and lambs in a very ſuperior manner, late in the ſpring, after turnips were gone: but notwithſtanding theſe great advantages, he gave the culture up: from which we may conclude a deficiency in value. "In ſeveral experiments (though not altogether determinate), I found the value, upon an average of all applications, to be 13d. a buſhel, heaped meaſure; eſtimating which at 70lb. weight, the ton is L. 1, 14s." The following are the valuations of ſeveral gentlemen of the value of carrots in the way of fattening cattle;

	per ton.		
Mr Melliſh of Blyth a general valuation of horſes, cows, and hogs, -	L 1	0	0
Mr Stovin of Doncaſter, hogs bought lean, fatted, and ſold off, - -	4	0	0
Mr Moody of Ratford, oxen fatted, and the account accurate, - -	1	0	0
Mr Taylor of Bifrons, ſaving of hay and corn in feeding horſes, - -	1	0	0
Mr Le Grand of Ath, fattening wethers,	0	13	9
Sir John Hoby Mill of Biſham, fattening hogs, - - - -	1	6	0
Mr Billingſley, for fattening hogs, -	1	13	0

Some other gentlemen whom our author conſulted, could not make their carrots worth any thing: ſo that, on the whole, it appears a matter of the utmoſt doubt, ſo contradictory are the accounts whether the culture of carrots be really attended with any profit or not. Thus Sir John Mill, by fattening hogs, makes L. 1, 6s. and Mr Stovin L. 4; but others could not fatten hogs upon them at all: and ſome of Mr Young's neighbours told him, that carrots were good for nothing except to *ſcour* hogs to death. The experiment of Mr Le Grand upon wethers appeared to be made with the greateſt accuracy; yet two circumſtances ſeem to militate againſt it. 1. The ſheep were put lean to them; whereas it is a fact well known, that if they are not half fat when put to turnips no profit will reſult; and it is poſſible that the caſe may be the ſame with carrots. 2. He gave them alſo as much fine hay as they would eat.

68 New experiments recommended.

In this uncertain ſtate of the matter, the only thing that can be done is to make a number of experiments with as much accuracy as poſſible, in order to aſcertain the real value *per* ton: and our author endeavours to ſhow, that there is no danger of loſing much by experiments of this kind. "I have ſhown (ſays he), that they are to be cultivated for L. 4 *per* acre, left on the ground for ſheep. Suppoſe the crop only two buſhels at 70lb. each, *per* rod, 320 *per* acre, or ten tons; it will readily be agreed, that ſuch a produce is very low to calculate upon, ſince 20 tons are common among carrot cultivators. It appears from Mr Le Grand's experiments, that a wether worth L. 2, 5s. eats 16lb. of carrots, and four pounds of hay *per* day: dropping the hay, and calculating for ſheep of leſs that half that ſize (which are much more common), it will be perhaps an ample allowance to aſſign them 12lb. of carrots a day. If they are, as they ought to be, half fat when put up, they will be completely fattened in 100 days. At this rate, 10 wethers will, in 100 days, eat 11 tons, or very little more than one moderate acre. Now, let it be remembered, that it is a good acre of turnips which will fatten eight ſuch wethers, the common Norfolk calculation: from which it appears, that one acre of carrots are, for this purpoſe, of more value than two of turnips. Further, let us ſuppoſe horſes fed with them inſtead of oats: to top, cart, and pack up, 10 tons of carrots, I know may be done for 20s.—an acre, therefore (other expences included) coſts L. 5. Fifty pounds weight of carrots are an ample allowance for a horſe a day: ten tons, at that rate, laſt three horſes for five months. But this L. 5 laid out in oats at 16s. *per* quarter, will purchaſe little more than ſix quarters; which will laſt three horſes, at two buſhels each *per* week, no more than two months; a moſt enormous inferiority to the carrots."

69 Experiment on feeding lambs with them.

In the ſame volume, p. 187. Mr Young gives an account of another experiment made by himſelf on the feeding of lambs with carrots. The quantities they eat varied exceſſively at different times; thirty-ſix of them conſumed from five to ten buſhels *per* day; but on an average, he rates them at four buſhels of 56 pounds *per* day. In all they conſumed 407 buſhels from November to April, when they were ſold and killed fat. At putting upon the carrots, the lambs were valued only at L. 18, but were ſold in April at L. 25, 4s.; ſo that the value of the carrots was exactly L. 7, 4s.; or about 4d. *per* buſhel. This price he ſuppoſes to be ſufficient to induce any one to attempt the culture of carrots, as thus he would have a clear profit of 40s. *per* acre; "which (ſays he) is greater than can attend the beſt wheat crops in this kingdom." The land on which the carrots grew was ſown next year with barley, and produced the cleaneſt in the pariſh; which contradicts an aſſertion our author had heard, that carrots make land foul. The graſs upon which the ſheep were fed with the carrots, and which amounted to about an acre, was very little improved for the crop of hay in 1781, owing to the dryneſs of the ſeaſon; but in 1782 was greatly ſuperior to the reſt of the field, and more improved in quantity: "for, inſtead of an indifferent vegetation, ſcattered thick with the centaurea ſcabioſa, ſilago, rhinanthus, criſta galli, and linum catharticum, with other plants of little value, it encouraged a very beautiful ſheet of the beſt plants that can appear in a meadow, *viz.* the lathyrus pratenſis, achillea millefolium, trifolium repens, trifolium ochroleucrum, trifolium alpeſtie, and the plantago lanceolata.

70 Carrots compared with cabbages.

In the ſame volume of the Bath Papers, p. 227, Mr Billingſley gives an account of the comparative profit of carrots and cabbages. Of the former, however, he obtained only ſeven tons 15 cwt. *per* acre; the cabbages produced 36 tons: neverthele ſs, according to him, the profit of the former was L. 5, 8s.; of the latter, only L. 3, 11s. In a paper on the culture of carrots by Mr Kirby of Ipſwich, vol. 3. p. 84. informs us, that he never determined the weight of an acre, but reckons the produce from 200 to 500 buſhels; which, at 56 lb. to the buſhel, is from five to ten tons and an half. In the ſame volume, p. 320, the Rev. Mr Onley ſeems to prefer the culture of carrots to potatoes. "However valuable (ſays he) from eaſe of culture, and greatneſs of produce to the poor, eſpecially in all ſmall

71 Culture of carrots preferred to potatoes.

ſpots, I doubt, unleſs near great towns, whether, on a farming plan, potatoes be ſo eligible as other herbage or roots; eſpecially as carrots, which I cannot but *ſurmiſe* (for my trials are too trival to venture bolder language), deſerve every encouragement, even on ſoils hitherto thought too heavy for them.—I am from experience convinced, that an acre of carrots will double in the quantum, of equally hearty provender, the product of an acre of oats; and from the nature of their vegetation, the nice mode of cultivation, and even of taking them up (all of which, expenſive as they are, bear a very inferior proportion to the value of a medium crop), muſt leave the land, eſpecially if taken off it in an early period, ſo mellow for the plough, as to form a ſeed-bed for barley equal to any fallow tilth."

Mr Onley's deſideratum was a ſubſtitute for oats to feed horſes; of which great numbers are kept in his county (Eſſex). Potatoes, he obſerves, are excellent for *ſmall* pork, when baked or boiled, mixed with a little barley-meal; but for large hogs, they are moſt profitably given raw, if theſe have at the ſame time the ſhack of the barn door in the threſhing ſeaſon, &c. In the 5th volume he reſumes the ſubject, and acquaints us, that he applied a ſingle acre in his bean-field to the culture of carrots, which generally produced 400 buſhels; and this he conſiders as a ſmall produce. "I am, however, ſenſible (ſays he) that they will amply repay every expence of the fineſt culture; and ſhould, from their extenſive utility on ſound, deep, and friable land, be every where attempted. Some of my neighbours, who have been induced to try them on rather a larger ſcale, with finer culture, and freſher ſoil, have raiſed from 600 to 900 buſhels *per* acre, and applied them more profitably, as well as more generally, than any other winter-herbage, to deer, ſheep, bullocks, cows, and horſes. At the loweſt calculation, from our little trials, they are computed to exceed turnips in value one-third, as to quantity of food; but are far ſuperior in what ariſes from convenience for the ſtable; where to us they ſeem to be a ſubſtitute for corn to all horſes, at leaſt ſuch as are not uſed in any quick work; and partially ſo with corn for thoſe that are."

72
Superior to turnips and oats.

In making a compariſon betwixt the profit on oats and carrots, Mr Onley finds the latter exceed by no leſs than L 2. 15s. 8d. *per* acre. His method of cultivation is to ſow them in March or April; to hoe them three times, harrowing after each hoeing. Sometimes he leaves them in the ground till after Chriſtmas, taking them up as wanted; but of late he takes them up in October, in dry days, putting them directly into ſmall upright cocks of 10 buſhels each, covered entirely with the tops cut off.—Thus they appear to dry better than in any other way, and bear the weather with very little loſs. If, after being thus dried, they are carried into any barn or ſhed, it will be better, if they are in large quantities, not to pack them cloſe, on account of the danger of heating, but rather to throw them promiſcuouſly into heaps, with a little ſtraw over them. When perfectly dry, they do not in general require any waſhing, except for horſes regularly kept in the ſtable.

Sect. VII. *Turnips.*

75
Their culture generally attended with no profit.

These have long been in ſuch general uſe as food for cattle, that the profit on raiſing them might be reaſonably thought to be altogether certain; nevertheleſs, Mr Young, in the paper already quoted, informs us, that "turnips dunged for are univerſally a loſing crop: for if they are ſtated from 30s. to 40s. an acre, their value does not amount to the dung alone which is ſpread for potatoes; yet the latter pays that dung, all other expences, and leaves a profit ſometimes conſiderable. I admit that turnips fed upon the land will prepare better for corn; but that is by no means the queſtion. Would not the dung raiſed in the farm-yard by the conſumption of the potatoes, ſuppoſing it ſpread on the potato acre, make the produce more than the turnip one? I have no doubt but it would give a ſuperiority. But turnips are liable to great failures, and cannot be relied on late in the ſpring; potatoes may; and are applicable to uſes to which the other root cannot be applied."—In the ſecond volume of the Bath Papers, p. 101. we have a comparative account of the value of turnips, turnip-rooted cabbage, and lucerne, as food for cattle. The reſult of this writer's obſervations is, that "when ſheep are allowed as many turnips as they can eat (which ſhould always be the caſe when they are fattening), they will, on an average, eat near 20 pounds each in 24 hours.—An acre of turnips twice hoed, will, if the land be good, produce about 50 tons; which will, on the above calculation, maintain 100 ſheep 52 days. The ſheep mentioned weigh 20 pounds *per* quarter.—An acre of turnip-rooted cabbage will maintain 100 ſheep for a month, and ſometimes five weeks; but an acre of Scots cabbages will maintain 200 ſheep a full month." The number fed by lucerne is not determined.

74
Compared with other vegetables as food for cattle.

75
The fly occaſions great inconvenience in turnip culture.

The greateſt diſadvantage which attends a crop of turnips, is their being ſo ready to be damaged by the fly, which ſometimes deſtroys them ſo completely, that they muſt be ſown over again two or three times the ſame ſeaſon, and even this without any certainty of ſucceſs. Innumerable methods of avoiding this evil have been projected, which may all be reduced to the following claſſes: 1. Steeping the ſeed in certain liquids. 2. Fumigation of the fields with the ſmoke of certain herbs. 3. Rolling. 4. Strewing ſoot, lime, aſhes, &c. on the ſurface of the ground. It is very difficult, however, to determine, with any degree of certainty, whether remedies of this kind are effectual or not; becauſe ſometimes the turnips are not injured though no precaution has been made uſe of: and when this happens to be the caſe, after the uſe of any ſuppoſed preventative, the preſervation of the crop is aſcribed to the uſe of that preventative, whether it be really efficacious or not.—The virtues of ſteeps ſeem to have been fully aſcertained by Mr Winter Charlton near Briſtol, of whoſe experiments an account is given in the Tranſactions of the Society for Encouraging Arts, vol. 5. The ſeeds were of the Dutch kind, ſowed on beds in the kitchen-garden in drills about 12 inches diſtant, an inch and a half deep, on the 11th of May 1786. The beds had been prepared with rotten dung in May 1785, and afterwards ſown with cabbages. The quality of the turnips is exhibited in the following table; the beſt being marked 1; and thoſe of inferior quality, 2, 3, &c. The obſervations were taken on the 26th of June.

76
Whether ſteeps for turnip ſeed be of any uſe.

Seed without any preparation, - -	1
ſteeped in train-oil, flouriſhed extremely,	
ſteeped in linſeed-oil, ſomewhat inferior,	1

Turnips.

Seed mixed with ſoot and water, - -	2
with drainings of a dung hill, -	2
with elder and barton draining, -	2
with ſoot, - - -	3
with elder leaf juice, - -	3
with elder and barton draining, ſoot being ſowed over the covered drills,	3
with ditto, and lime ſowed over the drills, - - - -	3
ſowed with ſoot ſcattered over, and then covered, - - - -	3
with barton-draining, - -	4
an elder-buſh drawn over when the plants appeared, - - -	4
with ſtale human urine very few plants appeared	
with ſlacked lime ſcattered over, and then covered, very few plants appeared,	
with elder, barton-draining, and ſlacked lime, very few plants appeared,	
with lime and barton-draining did not vegetate.	

Another ſet of experiments was made with the green Norfolk turnip, drilled an inch and an half deep, the rows one foot diſtant, on beds eight feet three inches long, and two feet wide; half a drachm of ſeed allowed for each bed, ſteeped and mixed with various ſubſtances like the former. The ſeeds were drilled upon unmanured ground on the 20th of June 1786, and the obſervation made on the 17th of July. None of the beds were found free from the ravages of the fly; but the ſeeds which had been ſteeped in train-oil and linſeed-oil were much more free from this injury than the others. The linſeed-oil, as in the former experiment, was found inferior to the train-oil, which was ſuppoſed to have been owing to its being kept in a bottle that had formerly held oil of turpentine. The leaves of the ſteeped ſeeds were of a much darker green than the others, appeared twice as thick in bulk and luxuriancy, and the plants were conſiderably larger than thoſe of the other kinds. The ſubſtances mixed with the reſt were ſoaper's aſhes, wood-aſhes, pounded gun-powder, brimſtone, ſlacked lime, ſoot, barton-draining; ſometimes mixed together in various proportions, and ſometimes with the addition of a portion of ſifted mud.

These experiments ſhow, that no dependence can be had on ſteeps or mixtures of any kind with the turnip-ſeed; though the train-oil and linſeed-oil ſeem greatly to have forwarded the vegetation of the plant. It does not appear that fumigation † has ever been tried; nor indeed does it ſeem eaſy to be tried in ſuch a manner as might enſure ſucceſs.—In the fourth volume of the Bath Papers, Mr Gullet of Devonſhire gives ſuch directions for performing the operation as he thinks would be productive of ſucceſs.—In a preceding paper he had explained the good effects of fumigating orchards; but the caſe with theſe muſt be very conſiderably different from a field of turnips. The trees in an orchard are elevated above the ground, and the ſmoke naturally aſcends, and is blown along their tops: but in fumigating a large field of turnips, it muſt creep along the ground in ſuch a manner as is by no means agreeable to its nature; and without an exceſſive degree of labour, as well as a vaſt quantity of burning materials, there cannot be the leaſt hope of ſucceſs. Mr Gullet's directions are as follow: "If the turnip-ground be ſpaded and burnt, or the weeds, &c. burnt without ſpading, the fumigation thereby may ſuffice to chaſe ſuch of the winged tribe from thence as are then there; but in all caſes, when the field is ploughed and ready for ſowing, let heaps be made at different places and intervals round by the hedges and boundaries of the turnip-ground, and ſome few ſcattered through the field; then, as ſoon as the ſeed is ſown, let the heaps on the windward ſide and the ſcattered ones be lighted and kept ſmothering during the continuance of the wind in that quarter; the leſs the fire, and the more the ſmoke, the better. Should the wind happen to ſhift, thoſe heaps on the quarter it ſhifts to muſt then be lighted and kept ſmothering in like manner; ſo that, during the growth of the tender turnip leaf, and until it becomes rough and out of all danger, this fumigation and ſmoke, over and acroſs the field, muſt be continued from one quarter to the other; which, I venture to aſſert, will effectually deter and prevent any winged inſect-tribe from approaching the turnip-ground; nay more, if there already, it would moſt completely drive them from thence, as ſuch delicately formed inſects (which can only feed on the moſt tender leaf) would be ill able to continue long in ſuch a ſmother of fire and ſmoke. The conſequence is obvious and certain, that if the fly be kept from approaching the field, the turnip-crop is ſafe; and few, I believe, will diſagree with me, that *prevention is better than remedy*."

77
Mr Gullet's directions for fumigations.

Our author does not ſay that he has ever tried this method with turnips; but lays great ſtreſs upon his ſucceſs in a ſimilar experiment with cabbages, in order to preſerve them from the caterpillar. To make the matter more ſure, however, he recommends the trailing of a buſh of elder over the turnip field at the time of harrowing or bruſhing in the ſeed: but this remedy has by numberleſs experiments been found inſignificant, and by thoſe above related ſeems even to be pernicious: ſo that whatever good effects we can expect from this method, muſt depend on the fumigation alone; and even this is attended with very great uncertainties; as has already been obſerved.

78
Of rolling.

Rolling promiſes to be of ſervice when the young turnips are attacked by ſnails, which frequently deſtroy them; but it cannot be ſuppoſed to have much effect in deſtroying flies, theſe being too numerous and too minute to be effectually cruſhed by the roller; and indeed, though this has been frequently recommended, we have no deciſive proofs of its having ever been attended with any good effect.

The ſtrewing of ſoot, lime, aſhes, &c. upon the ground, have been determined ineffectual by the experiments already related, at leaſt when applied before the turnips come up; and there ſeems to be little hope of their proving more effectual even when applied after the crop has appeared above-ground. We may argue indeed *à priori* about the taſte or ſmell of ſoot, lime, &c. being diſagreeable to inſects; but of this we have no proof: and even though this were the caſe, the leaf ſoon emerges from under this covering, or the inſects will feed on the under part of the leaves, where theſe ſubſtances cannot lie. It is evident, therefore, that very little can be expected from any of the methods hitherto propoſed either by way of cure or prevention. The more probable methods are,

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† See *Agriculture*, nº 78.

79 Early ſowing recommended.

1. To ſow the turnips at ſuch a ſeaſon of the year, that they may be well grown before the fly makes its appearance. In the Bath Papers, vol. iv. p. 132. Mr Wimpey obſerves, that, in order to procure food for their cattle in the ſpring before the graſs is grown, farmers are obliged to poſtpone the ſowing of turnips beyond the natural time of vegetation; but were turnips to be ſown in April, as ſoon as the ſeaſon would permit, it is very probable that there would be as great a crop of them as of other vegetables uſually ſown in theſe months. On account of the delay in ſowing, however, for the reaſon already mentioned, the ſucceſs of the farmer becomes exceedingly precarious, unleſs he is ſo fortunate as to have a few rainy days, or cloudy weather and frequent ſhowers, ſoon after the ſeed is ſown: and this our author ſuppoſes to be the true reaſon why the turnip is a more uncertain article than any other. But though ſpeculations of this kind have a great ſhow of probability, there is not any experiment hitherto publiſhed, even by our author himſelf, by which the truth of them can be abſolutely aſcertained. Our author, however, is of opinion, that none of the common methods propoſed can anſwer any good purpoſe, farther than as by means of them the vegetation of the plant may be invigorated. Mr Wimpey recommends aſhes, ſoot, or a rich compoſt of lime and dung, uſed in ſufficient quantities; but the method of uſing them is, either to ſow them with the ſeed, or rather by themſelves immediately before, and to harrow them well in, that they may be completely incorporated with the ſoil. This for the moſt part would ſo invigorate and encourage the growth of the plants, as to be an overmatch for the moſt vigorous attacks of the fly.

80 Sowing a great quantity of ſeed.

2. Another method propoſed for ſecuring turnips from the fly, is by ſowing ſuch a quantity of ſeed as will be more than ſufficient for the conſumpt of the inſects. This we find recommended in a letter to the Bath ſociety by a gentleman-farmer in Eſſex, vol. ii. p. 238. His method is to make the land clean and fine as ſoon as the ſeaſon will permit, and to ſow four pints *per* acre. It may be objected, that if the fly does not take them, the plants will ſtand ſo thick that they cannot eaſily be hoed; but this may be obviated by harrowing them firſt, which will make them fit for the hoe. There can be no expectation of a crop if the fly takes them when only a pint of ſeed is ſown *per* acre; but this gentleman remarks, that he has not in any one inſtance miſſed of a crop when he ſowed four pints; becauſe, though the fly has ſometimes deſtroyed more than one half, and much damaged the other, ſtill there was a ſufficient number left behind. He alſo agrees with other of the Society's correſpondents, that the ground ſhould be well dunged and manured previous to the ſowing of turnips, as this makes them grow vigorouſly, ſo that they quickly get into the rough leaf, in which ſtate the fly will not touch them.

81 Manuring in autumn preferable to ſpring manure.

In the ſame volume, a gentleman of Norfolk remarks, that manuring the ground in autumn for turnips is preferable to the doing ſo in ſpring. This diſcovery he made in conſequence of the following accident.—“A neighbouring farmer, not having a ſufficient quantity of manure for all his turnip land, was under the neceſſity of ſowing four acres unmanured. The effect was, that the turnips of the manured part of the land were moſtly eaten off by the fly, while four acres unmanured eſcaped without injury.” In conſequence of having obſerved this, the gentleman made a ſimilar experiment, by manuring five acres well for turnips, and tilling three acres and an half in the uſual way without any manure. The manured crops were almoſt all deſtroyed by the fly, ſo that he was obliged to ſow moſt of the land over again. The three acres and an half which had no manure were entirely free from injury, though the plants were much ſmaller than thoſe of the manured ground which came up. Not content with this trial, however, he repeated the experiment, by manuring ſix acres of wheat ſtubble in autumn, ploughing it in immediately, and leaving it to incorporate with the earth during the winter: the turnips which grew upon this were as large as if the ground had been manured in the ſpring. This experiment was repeated with ſurpriſing ſucceſs in two ſucceeding years; whence he infers, that the fly is either engendered in the new dung or enticed by it. But when the manure is laid on in autumn it looſes its noxious qualities, though it ſtill retains its nutritive ones.—This concluſion, however, does not appear to be well founded; for it is certain from undoubted experience, that turnips which have been well manured in the common way, have ſometimes eſcaped any injury; while others, which have got no manure at all, have been almoſt totally deſtroyed. Another material advantage, however, which this correſpondent obſerves is to be derived from manuring in autumn is, that all the ſeeds contained in the manure, and which are of courſe carried on the land with it, vegetate almoſt immediately, and are moſtly killed by the cold of the ſucceeding winter, while the few that remain can ſcarce eſcape deſtruction from the ploughſhare.

82 Mr Wimpey's opinion of ſowing a great quantity of ſeed.

Mr Wimpey is alſo of opinion, that it is proper to ſow a large quantity of ſeed; but thinks two pounds will be ſufficient for an acre. A few ounces indeed would be ſufficient to ſtock the land; but as the article is ſo precarious, he thinks it by far the ſafeſt way to allow ſeed in plenty, and reduce the plants afterwards by harrowing. He obſerves alſo, that it is of great conſequence to have ſeed both good in quality and of the beſt ſpecies. He prefers the large and green topped, as being the moſt ſweet and juicy; others give the preference to the red or purple-topped, as being hardier: but at any rate, the ſeed from the largeſt and fineſt tranſplanted turnips, of whatever ſort, is greatly to be preferred, even though it ſhould coſt double or treble the price. Such as is ſold by the ſeedſmen in London he found generally of a mixed kind, and often in great part not worth cultivating. “Whether plants from new or old ſeed are moſt ſecure from the depredations of the fly (ſays he), is perhaps a queſtion which cannot be eaſily determined even by experiment; for concomitant circumſtances are frequently ſo much more operative and powerful, as to render the difference between them, if there be any, imperceptible. It is, however, known to every practical man, that new ſeed ſprouts or vegetates ſeveral days before old; and I think more vigorouſly: and it is equally well known, that the healthy and vigorous plants eſcape the fly, when the ſtinted and ſickly ſeldom or never eſcape them.

83 Of the quality of the ſeed.

Turnips.

It ſhould ſeem then, that new ſeed, *cæteris paribus*, is more ſecure from the fly than old; and for my own uſe I would always prefer it."

84
Of ſowing turnips with other grain.

3. The ſowing of turnips along with other grain.—This, of all others, ſeems to be the moſt eligible and efficacious. In the ſecond volume of Bath Papers, p. 210. an Hertfordſhire correſpondent gives an account of the ſucceſs of an experiment of drilling turnips with wheat. A ſmall field of ſpring-wheat was drilled in rows two feet apart; and in the month of May turnips were ſown by hand in the intervals. They came up very well, and were thinned once by the hoe. The crop of wheat turned out better than another field of the ſame ſoil ſown broadcaſt in autumn, though it ripened ſomewhat later. The turnips were no other way injured by cutting it, than having ſome of the large leaves trodden down by the reapers. After harveſt the weeds were cut up round the turnips with a hand-hoe, and they grew very large and vigorous. They were of the purple and white long kind, and the crop proved nearly as good as the ſame land produced in common. An excellent crop of barley and clover was got from the ſame field afterwards.

85
With wheat.

86
Mr Anderdon's experiments of ſowing them with beans.

In the third volume of the ſame work we find an account of ſeveral ſucceſsful experiments in ſowing turnips between rows of beans. The advantages of this method are ſtrongly ſet forth by R. P. Anderdon, Eſq; who made ſome of the experiments, and are as follow: "1. You may have a crop of beans and turnips on the ſame field the ſame year. 2. The bean crop being well horſe-hoed, no ploughing is wanted for turnips, for which the beſt Norfolk farmers give five ploughings. 3. It is hoed cheaper, more effectually, and conſequently more profitably, than in any other way. 4. The ground is kept clean from weeds. 5. It is in order for a Lent crop the ſucceeding year with one earth. 6. The ground is kept in heart, if not improved, by fallowing your alleys. 7. It brings the plant to perfection in poor ground, where it would not become ſo otherwiſe. 8. It doubles the crop in any ground which Mr Anderdon has had experience of. 9. You have the crops more within your own power in this than in any other method, let the ſeaſons turn out as they will. 10. You may have on the ſame ground a bean and turnip crop annually, if the land be ſuitable, and you think proper. 11. The clay farmer, by this mode, renders land which is naturally unfit for turnips, ſo free and open by ſeaſonable horſe-hoeings, that it will bring this uſeful plant to great perfection."

87
Objections by the Bath Society.

On this paper the ſociety made ſome remarks, and ſtated the following objections: 1. The ſame ſoil cannot be proper for both crops. Scotch cabbages are more adapted for a bean ſoil; and they wiſhed him to repeat the experiment with cabbages inſtead of turnips betwixt his beans. 2. The Norfolk farmers rarely uſe more than three plougings for turnips, inſtead of five, as Mr Anderdon repreſents, unleſs the ground be full of couch-graſs. 3. They think him too ſanguine in his expectations of having double crops on the ſame field. 4. Nothing renders a clay ſoil ſo free and open as to have it expoſed to froſts and ſnow by being laid up in high ridges in January and February; but, on Mr Anderdon's plan, this cannot be done, unleſs the turnips are leſſened in value by being fed off in autumn.

Turnips.

88
Mr Anderdon's reply.

Theſe ſtrictures were ſent to Mr Anderdon before the papers were printed, but did not make any alteration in his opinion; and he replied to the following purpoſe:

1. *The ſame ſoil cannot be proper for beans and turnips*, &c.—Granted.—But had Mr Anderdon adhered rigorouſly to this rule, he would have ſowed no turnips at all, not having on his farm any ſoil altogether proper for that crop; "but (ſays he) while I can get in ſingle rows, four feet aſunder or more, from half a dozen to half a ſcore tons of turnips *per* acre, after, or rather between, a crop of beans in my heavy lands, I ſhall feel that product here more beneficial than to drop the mode. I believe the medium of the two, ſo far as I can judge by the eye or get information, to be ſuperior to the average produce of prepared fallow turnip crops in 10 miles round me."—On this the Society make the following remarks: "The queſtion here is, Whether, if inſtead of turnips, Mr Anderdon had planted his beans two feet diſtant only, the extra produce of his crop would not have exceeded in value that of his turnips? We think they would, as theſe intervals would freely admit his horſe hoe between the beans."

Mr Anderdon then proceeds to acquaint the committee, that he had tried the experiment as they wiſhed with Scotch cabbages inſtead of turnips betwixt the rows of beans; but the crop of the turnips was ſo much preferable, that he found himſelf inclined to ſuppoſe the cabbage would not get to ſo great perfection there as to be profitably introduced on a large ſcale, for want of the great quantity of dung neceſſary for that crop, and which could not be procured in that part of the country. He further remarks in favour of turnips, that they have an abundance of very ſmall lateral fibrous roots, which run ſo far in ſearch of food, and feed as ravenouſly where they can penetrate, as thoſe of almoſt any other vegetable; and the plant certainly derives more nouriſhment from thoſe than from its tap-root (A). Thoſe fine fibrous roots, almoſt imperceptible to the eye, iſſue chiefly from the apple or body of the turnip, and get into the richeſt part of the ſoil near the ſurface, and will bring the plants to a conſiderable magnitude in heavy lands adapted to beans, when mellowed by the horſe hoe. Some of his turnips weighed ten pounds each: and if he could have only two ſuch turnips on every ſquare yard, it would be at the rate of 43 tons per acre.

2. *The Committee doubt of the poſſibility of doubling the crop*. Mr Anderdon gives the following explanation. "I have made many comparative trials on turnips between this mode and broad caſt ſowing, and always found on *my ground* the horſe hoed crops the beſt. But here, in denoting the benefits of the horſe-hoe by its *doubling* a crop, I wiſh to be underſtood, that if, *in ſoils like mine*, a crop be drilled, leaving proper in-

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(A) Here the Society remark, that this is not the caſe with thoſe kinds of turnips which grow chiefly above ground, and which are generally the beſt crops, and moſt capable of reſiſting the froſts.

tervals for horſe-hoeing, and one part be horſe-hoed the other not, the horſe-hoed part will double the other in product."

Mr Anderdon, in the courſe of his reply to the committee, gives an account of another experiment he made in conſequence of being deficient in winter fodder for his cattle. By this neceſſity he was induced to ſow turnips wherever he could; and on the 18th of July drilled a ſingle row between his drilled wheat. On the 20th and 22d of Auguſt he drilled four rows of winter vetches in each interval between the turnips. at the rate of leſs than one peck and three quarters of ſeed to an acre. "The turnip crop (ſays he) is very acceptable, and my vetches ſucceed beyond my warmeſt expectation; are thick enough, and give me the pleaſing proſpect and hope, that I ſhall not, when my dry meat is gone, want a ſeaſonable ſupply of early green fodder that will laſt me till my lucerne comes on."

89
Mr Pavier's opinion.

This ſubject is further conſidered in the ſame volume by Mr Pavier, who viewed Mr Anderdon's turnips, and gave in a report of them to the committee. He ſuppoſes a crop of beans drilled in ſingle rows at four feet diſtance, and the turnips drilled in the intervals, according to Mr Anderdon's method, there will then be four rows of 17 feet in length to make a ſquare perch; whereas Mr Anderdon's rows were only 15 feet 8 inches in length; and this diſparity in length will make a difference of weight on a perch from 230 to 249 pounds, ond on an acre from 16 tons 8 cwt. 2 qrs. 8 lb. Mr Anderdon's produce, to 17 tons 15 cwt. 2 qrs. 24lb.—Each turnip at this diſtance (*viz.* four feet from row to row, and nine inches in the rows) muſt occupy a ſpace of three ſquare feet; conſequently the greateſt number produced on an acre muſt be 14,520; but if ſown in broadcaſt, twice hoed, and the diſtance on an average 15 inches, each turnip will then occupy little more than one foot and an half, and the number produced on an acre may be about 27,920; an exceſs which may reaſonably be ſuppoſed to overbalance the value of the beans, let us ſuppoſe the crop as great as we can reaſonably do. Thus far the argument ſeems to lie againſt this method of cultivating beans and turnips together: but on the other hand, Mr Pavier conſiders it probable that the expence of drilling and horſe-hoeing the beans, together with drilling the turnips in the manner Mr Anderdon did, muſt be conſiderably leſs than that of fallowing and preparing the ground, and ſowing the turnips in broad-caſt; to which we muſt likewiſe add the facility of hoeing the drills in compariſon of the broad caſt. But beſides theſe, the great advantage ariſing from this method, and which, if certain, gives it a decided ſuperiority, is, "the great chance, if not an almoſt certainty, of preſerving the turnips from the depredations of the fly." Mr Pavier was inclined to think that this muſt be the caſe, as Mr Anderdon had ſuch crops repeatedly without any damage of that kind: but the committee differ from him, and think that this muſt have proceeded from ſome other cauſe; though they do not aſſign any reaſon for this opinion. "The principal point (ſays Mr Pavier), in determining this queſtion, ſeems to me to be this: if the crop of beans drilled as above, after deducting the ſeed, and ſome additional expence in taking the crop off the ground without injuring the turnips, can be, one year with another, ſuppoſed to be as valuable as the quantity of turnips that might be reaſonably expected in the broad-caſt method more than in the other, I ſhould not heſitate to declare in favour of drilling between the beans."

Thus far the argument ſeems to be carried on *à priori.* Mr Wimpey, in the letter already quoted, inclines to the practice of ſowing turnips between beans planted in rows. "It exactly correſponds (ſays he) with all my obſervations on the ſucceſsful vegetation of that root. A conſiderable degree of moiſture is neceſſary to the rapid vegetation of that very juicy root, and nothing retains moiſture equal to ſhade; and ſhade can be obtained and ſecured by no means ſo effectually on a large ſcale as in the intervals of tall growing plants, as beans or wheat planted in drills." The ſucceſs of Mr Bult of Kingſton near Taunton, leaves little room to doubt of the propriety of the method, and its ſucceſs in preventing the fly. The beans were planted in drills not quite two feet aſunder, on two plowings, horſe hoed three times, and the turnips ſown in the intervals at the laſt hoeing. The field meaſured ſix acres and a quarter, and was a very good clayey ſoil, but had not been manured, nor had any dreſſing laid upon it for ſix years before. It produced this year three quarters of beans per acre, and 37 tons 5 cwt. of turnips. This field was alſo viewed by Mr Pavier, who makes the following obſervations upon it. 1. The turnips were ſown promiſcuouſly among the beans at the laſt hoeing, which was given about midſummer; from which time nothing was done but drawing off the beans and carrying them off the land. 2. The crop of beans was believed to be conſiderably above 20 buſhels per acre, which is much more than were produced by any other method that ſeaſon in the neighbouring part of the country; and as Mr Pavier had this account before he ſaw the turnip crop, he did not expect any thing conſiderable from the latter; but as it turned out, the produce muſt be accounted highly profitable, when we conſider that there was no crop loſt, no preparation, dreſſing, nor any expence whatever, excepting the price of the ſeed and ſowing it. 4. This he conſiders as one of the ſtrongeſt recommendations of the drill huſbandry he ever knew or heard of; but he is of opinion that it never can anſwer except where the ground is perfectly clean and free from weeds, by the crops having been horſe-hoed for a few years before. 5. He thinks the beans ought to have been planted at wider intervals, by which the ſun and air would be freely admitted, and the plants would alſo be leſs damaged by the operation of the hoe.

90
Other experiments on ſowing turnips among beans.

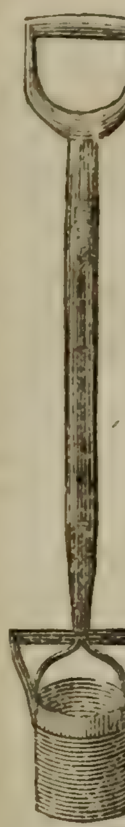
Mr Pavier likewiſe informs the Society of two other experiments on a ſimilar plan; but with this difference, that the turnips were ſown among the beans at the ſecond horſe-hoeing. The turnip crops were very good, and the beans more than *double* the value of thoſe raiſed in the uſual mode of huſbandry. "I think it is very evident (ſays he), that the beans preſerve the turnips from the fly; and as no expence or trouble attends the practice, I apprehend it will ſoon become more general." The Society own, that the uncommon ſucceſs of Bult's experiment *ſeems to militate* at leaſt againſt what they ſaid on Mr Anderdon's letter; but they inſiſt that the caſes are by no means ſimilar. "Though the land (ſay they), in both inſtances, is called a *heavy clay*,

clay, they are very different. Mr Anderdon's is poor, wet, and cold; the other a good rich clay; and we apprehend naturally mixed with a kind of marle, which is called clay by perſons not thoroughly acquainted with the nice diſtinction of ſoils apparently alike, but very different in their nature. Our principle, therefore, that cold wet clay lands are unſuitable for turnips, remains unaffected by this experiment, and general practice confirms the truth of the theory."

In another letter, Mr Pavier gives a more particular account of the two other crops of beans and turnips raiſed upon Mr Bult's plan. The beans were drilled in rows about 22 inches diſtance, twice horſe-hoed, and the produce from about 25 to 30 buſhels the computed acre, or from 30 to 36 buſhels the ſtatute acre. The preceding ſummer had been very unfavourable to beans, and the produce per acre in the common huſbandry did not, on an average, equal a third part of this quantity. One of theſe crops was ſuperior to that of Mr Bult: they were ſown upon a field of nine computed acres on the 10th of June, after the ſecond horſe-hoeing; but whether the ſecond hoeing was performed too ſoon, the ground not clean, or whatever might be the cauſe, the beans were weeded twice by hand afterwards; and he is of opinion, that the turnips were ſomewhat benefited by it. Mr Pavier was aſſured by a very intelligent farmer, that this was the beſt crop of turnips he had ever ſeen. The turnip-ſeed in the other crop was put in between the rows of beans by a hand-drill; but the work was badly performed, the plants coming up in ſome places vaſtly too thick, and in others as much too thin; but wherever they happened to be of a proper thickneſs, the farmer told him it was one of the moſt profitable crops he ever had. The ſoil was wet, heavy, and not very favourable for turnips. Hence Mr Pavier deduces the following concluſions. 1. That with reſpect to beans in particular, the drilling and horſe-hoeing is vaſtly ſuperior to the common mode of huſbandry. 2. That the beans are undoubtedly a good preſervative of the turnips from the depredations of the fly. 3. That as by this method no crop is loſt, and conſequently no rent, but a mere trifle of expence (if any) chargeable to the turnip crop, it muſt be one of the moſt profitable as well as the moſt certain method of propagating that uſeful root ever yet practiſed.—He ſtill inſiſts, however, that if he had an opportunity of trying this method, he would drill the beans in rows at a greater diſtance, that the turnips might be hand-hoed eaſily; and that he ſhould prefer the London tick-bean to any other, by reaſon of their ſhortneſs and being ſuch bearers; that he ſhould alſo take off their tops as ſoon as the under bloſſoms began to decay, which, he ſuppoſes, would be of great ſervice.

91
Inſtrument for tranſplanting turnips.
Bath Papers, vol. iv. p. 126.

We ſhall cloſe this diſſertation on the uſes and culture of turnips with an account of an inſtrument uſed in Norfolk for tranſplanting them, and thus filling up the gaps which frequently happen in fields from the failure of the plants in particular ſpots. It is repreſented on the margin; and the conſtruction and mode of uſing it is obvious from the figure.—When the turnips are to be tranſplanted, the workman holds the long handle with the left hand, and the ſhort one with the right hand drawn up. Put the inſtrument then over the plant that is to be taken up, and with your foot force it into the ground; then give it a twiſt round, and by drawing it gently up, the earth will adhere to the roots of the plant in a ſolid body; then with another inſtrument of the ſame ſize take the earth out where the plant is to be put, and bringing the inſtrument with the plant in it, put it into the hole which has been made by the other; then keep your right hand ſteady, and draw up your left, and the earth and plant will be left in the hole with the roots undiſturbed. In this operation two men muſt be employed, each of them having an inſtrument of the form repreſented on the margin. One man takes up a plant while the other fills his inſtrument with earth only, thereby making room for the depoſition of the plant; ſo that the hole which is made by taking up the plant is filled with the earth taken out where the plant is to be put; which being depoſited, he takes up a plant, and returns to the place he firſt ſet out from, the former man at the ſame time returning with the earth only: ſo that each man is alternately the planter, and each being employed both ways, the work goes on briſkly.—This inſtrument was the invention of Mr Cubitt Gray of Southrepps, Norfolk.



92
Norfolk cultivation of turnips.

Turnips being the grand baſis of the Norfolk huſbandry, Mr Marſhall gives a very particular account of their culture in that county.—The ſpecies cultivated are, 1. The common *white ſtock*, called in many places the Norfolk turnip. 2. The *purple ſtock* is ſimilar to the former, but its rind is of a dark red or purple colour; its ſize in general ſmaller, and its texture cloſer and firmer than that of the common white-ſtock; it alſo ſtands the winter better, and is more ſucculent in the ſpring, but it is not ſo well reliſhed by cattle as the former; whence it is leſs generally cultivated. 3. The *pudding ſtock*, the *tankard-turnip* of the Midland counties, is in ſhape ſo perfectly different from the common ſort, that it might be ranked as a diſtinct ſpecies. It riſes in a cylindrical form, eight, ten, or twelve inches high, ſtanding in a manner wholly above ground; generally taking a rough irregular outline, and a ſomewhat reclining poſture. It very much reſembles the common turnip, and is by much its moſt formidable rival. In many reſpects it ſeems to be ſuperior, particularly in being readily drawn, and eaten off by ſheep with much leſs waſte than the common turnip.—The diſadvantage is, that they are liable to the attacks of froſt, by reaſon of their ſtanding ſo high above the ſurface of the ground; ſo that on the whole, Mr Marſhall concludes, that the common white turnip is to be preferred to every other.

93
Advantage of uſing marl.

In Norfolk, turnips are ſown upon every ſpecies of arable land. Marl is found to be highly beneficial; and by means of this manure, a ſoil naturally unfit for turnips may be rendered proper for it. They ſucceed barley rather than any other crop; ſome few are ſown on wheat or pea ſtubble after harveſt; but this is not a general practice. The manures in greateſt reputation for turnips are dung, with a greater or ſmaller admixture of mould; *malt coombs* are alſo in good repute, and oil-cake is uſed by a few individuals; "but it may be ſaid, that nine acres of ten of the turnips grown in eaſt Norfolk are manured with muck."—The quantity of dung ſet on for a crop of turnips generally depends on the quantity on hand. and

94
Manures of different kinds.

and the quantity of turnip-ground to be manured. From 10 to 15 cart-loads of muck are conſidered as a good dreſſing; and about a ton of oil-cake to three acres; 50 or 60 buſhels of malt-coombs, and 40 or 50 buſhels of ſoot, to an acre.

[94] Cultivation of turnips for early conſumption.

95 Method of ſowing and culture.

When the turnips are intended for early conſumption, the ſooner they can be got into the ground the better; but when they are intended to ſtand the winter, the beginning of July is thought ſoon enough. The moſt general rule is to begin ſowing about a week before mid-ſummer, and continue till about a fortnight after, *viz.* from the 17th or 18th of June to the 7th or 8th of July.—Broad caſt ſowing is univerſal, in the quantity of two pints to an acre. The ſeed is covered by two lines of a pair of light harrows drawn backward, in order to prevent the lines, which uſually point ſomething forward, from tearing up the clods, and burying the ſeed too deep. The horſes are univerſally *walked* one way, and *trotted* back again in the ſame place. This is an excellent cuſtom: the quick zig-zag motion of the harrows at once aſſiſting to level the ſurface, and to diſtribute the ſeeds more evenly.—They are univerſally hoed; and unleſs they be ſown very late, are generally hoed twice. The diſtance of time between the ſowing and the firſt hoeing depends upon the ſoil and ſeaſon; the ſize of the plants being the only guide. When turnips are ſuffered to grow too large before they are hoed, the plants are difficult to be ſet out ſingly, and are liable to be drawn up by weeds, thereby acquiring a ſlender upright tendency; whereas their natural growth, in their infant ſtate, is procumbent, ſpreading their firſt leaves on the ground, and taking the form of a roſe.—If the hoe be put in too ſoon, the plants which are ſet out are liable to be buried, and their tender roots diſturbed in the act of ſetting out the neighbouring plants. The time for hoeing, as directed by the moſt judicious huſbandmen, is when the plants, as they lie ſpread upon the ground, are about the ſize of the palm of the hand: if, however, ſeed-weeds be numerous and luxuriant, they ought to be checked before the turnips arrive at that ſize, leſt by being drawn up tall and ſlender they ſhould acquire a weak and ſickly habit. The proper diſtance depends upon the nature of the ſoil and the time of ſowing; ſuch as are ſown early, in a rich productive ſoil, require to be ſet out wider than thoſe ſown late on a ſoil of a contrary nature. If the ſoil be at par, the diſtance ought to be regulated by the time of ſowing: if this be at par, the nature or ſtate of the ſoil ſhould be the regulator—Mr Marſhall complains of the conduct of the Norfolk farmers in general in this reſpect, who "hack out their turnips 14, 15, or perhaps 18 inches aſunder, without any regard to the ſtate of the ſoil or time of ſowing. This practice was eſtabliſhed while the Norfolk ſoil was full of marl, and new to turnips; and when, it is probable, 11 or 12 inches in diameter was no uncommon ſize, with tops proportionally large, and ſpreading; and 14 or 15 inches might then be a proper diſtance. But now, when the efficacy of marl is leſſened, and the ſoil no longer the favourite of turnips, which ſeldom reach more than ſeven or eight inches in diameter, it is ruinous and abſurd to continue the practice."

96 Cultivation of turnips for ſeed.

Turnips are cultivated either for ſeed, for ſale, or for conſumption. When cultivated for ſeed, it is ſuppoſed in moſt parts of the kingdom that it ought always to be taken from tranſplanted roots; but in Norfolk they are frequently raiſed from ſuch as are untranſplanted. "It is a fact (ſays Mr Marſhall) well underſtood by every huſbandman here, that if the ſeed be gathered repeatedly from untranſplanted roots, the plants from this ſeed will become coarſe-necked and foul-rooted; and the fleſh of the root itſelf will become rigid and impalatable. On the contrary, if it be gathered year after year from tranſplanted roots, the necks will become too fine, and the fibres too few; the entire plant acquiring a weak delicate habit, and the produce, though ſweet, will be ſmall. For the neck, or onſet of the leaves, being reduced to the ſize of the finger (for inſtance), the number and ſize of the leaves will be reduced in proportion; and in a ſimilar proportion will the number and ſize of the fibrils be reduced. From a parity of reaſoning, it may perhaps be inferred, that when the neck acquires a thickneſs equal to that of the wriſt, the ſize of the root will be in proportion.

"With reſpect to the fibres or rootlings, this is a juſt inference; but with reſpect to the bulb, it is in a great meaſure erroneous. For a few generations the ſize of the bulb will keep pace with the increaſe of leaves and fibres; but after having once reached the limits which nature has ſet to its magnitude, it begins to revert to its original ſtate of wildneſs, from which to its preſent ſtate it has undoubtedly been raiſed by tranſplantation. The farmer has therefore two extremes to avoid. The one is diſcoverable by the thickneſs and coarſeneſs of the neck, the ſcaly roughneſs of the bulb, the thickneſs of the rind in general, the foulneſs of its bottom, and the forkedneſs of its main or tap-root: the other, by the ſlenderneſs of the neck, the fineneſs of the leaf, and the delicacy of the root. The former are unpalatable to cattle, and are therefore creative of waſte: the latter are unproductive, are difficult to be drawn, and do not throw out ſuch ample tops in the ſpring, as do thoſe which are, by conſtitution or habit, in a middle ſtate between theſe two extremes. There is not, however, any general rule reſpecting how many years turnips ought to be tranſplanted ſucceſſively, and how often they ought to be ſuffered to run up from the ſeed-bed: the ſoil and ſituation have, and other circumſtances may have, influence on the habit and conſtitution of vegetables as of animals; and the farmer muſt attend alone to the ſtate of the turnips themſelves. Whenever he judges, that, by repeated tranſplantation, they have paſſed the acme of perfection, then it is his duty and intereſt to let them run up to ſeed without tranſplantation. In Norfolk it has been found, by long experience, that tranſplanting two, three, or four years, and letting the plants run up the third, fourth, or fifth, will keep the ſtock in the deſired ſtate. The time of tranſplanting is from Old Chriſtmas to Old Candlemas. In the choice of plants, the farmer is not guided by ſize, but picks the cleaneſt plants without regard to ſize; or, more accurately ſpeaking, he makes choice of ſuch as are near, but not at or above, the ſtate of perfection. In almoſt every turnip-field there are plants in various ſtates: much judgment, therefore, is requiſite in the choice of plants.

97 Method of planting.

A piece of good ground near a habitation is generally choſen for this purpoſe; but the method of planting is various: the

plants are generally ſet in rows, at uncertain diſtances from one another." Theſe diſtances our author has obſerved to be 16 or 18 inches, and the diſtance of the plants in them nine or ten inches; but the practice of a man who, he tells us, is indiſputably near the head of his profeſſion, is to plant them in rows two feet aſunder, the plants in the rows being contiguous. The only culture required, is to keep the intervals clean hoed; but when the ſeed begins to ripen, much care is requiſite to keep it from birds. If the plot be large, is is neceſſary to employ a boy to ſcare them; but if
98 **Method of ſcaring away birds.**
it be ſmall, and near the houſe, Mr Marſhall has known the following expedient uſed with ſucceſs. "On a ſlender poſt, riſing in the midſt of the patch of ſeed, was fixed a bell; from which a line paſſed into the kitchen; in the moſt frequented part of this hung the pull. Whoever paſſed the pull, rung the bell; ſo that, in a farm-houſe kitchen, where a miſtreſs and two or three maids were ſome of them almoſt always on the foot, an inceſſant peal was kept up; and the birds, having no reſpite from alarms, forſook their prey.

99 **Of drawing the turnips.**

The time of drawing commences about Michaelmas, and continues until the plants be in blow. The proceſs of drawing, he ſays, "in ſevere weather, is an employment which nothing but cuſtom could reconcile to thoſe whoſe lot it is to go through it, namely, ſtout lads and youths; whoſe hands are frequently ſwelled until the joints are diſcernible only by the dimples they form;" nevertheleſs he never heard of any inſtance of bad effects from this circumſtance. When the tops will bear it, their method of pulling is very expeditious: they pull with both hands at once; and having filled each hand, they bring the two together with a ſmart blow to diſengage the ſoil from the roots, and with the ſame motion throw them into the cart. If the tops be cut off by the froſt, or if this be in the ground, the turnips are raiſed with two tined forks named
100 **Snow-ſledge deſcribed.**
crooms. If the roots are buried under deep ſnow, it is removed by means of an implement called the *ſnow-ſledge*. This conſiſts of three deal-boards from one to two inches thick, 10 or 12 inches deep, and from ſeven to nine feet long; ſet upon their edges in the form of an equilateral triangle, and ſtrongly united with nails or ſtraps of iron at the angles; at one of which is faſtened, by means of a double ſtrap, a hook or an eye, to faſten the horſes to. This being drawn over a piece of turnips covered with ſnow, forces up the latter into a ridge on each ſide, while between the ridges a ſtripe of turnips is left bare, without having received any material injury from the operation. Though it is cuſtomary, in drawing, to clear the ground entirely, our author met with one inſtance in which the ſmall ones were left by a very good huſbandman on the ground, both to increaſe in ſize, and to throw out tops in the ſpring; it being obſervable, that a ſmall turnip ſends up a top nearly equal to one whoſe bulk is larger. There is one inconvenience, however, ariſing from this practice, the plough is prevented from entering upon the ſoil until late in the ſpring; which upon ſome ſoils, is an unſurmountable objection: though it may be very proper upon land which will bring good barley with one ploughing after turnips.

101 **Method of preſerving turnips.**

Mr Marſhall relates the following ſimple method, by which a Norfolk farmer preſerved turnips through a conſiderable part of the winter ſeaſon. Having cut off their tops with a ſpade, he gave them to his cows, and carried the bulbs to a new-made ditch, into which he threw them, and then covered them up with ſtraw, laying over it a quantity of bramble kids. Here they lay until wanted in a froſt. They were then again carted by means of a fork, and given to the cattle, who eat them as well, or rather better than freſh drawn turnips; and in general they come out as freſh as they went in. Our author is of opinion, that this method might be extended to the preſervation of turnips till the ſpring.

Sect. VIII. *Turnip-rooted Cabbage.*

102 **Advantages attending the cultivation of this root.**

This plant may deſervedly be reckoned next in value to the turnip itſelf. Its advantages, according to Sir Thomas Beevor, are, that it affords food for cattle late in the ſpring, and reſiſts mildew and froſt, which ſometimes deſtroy the common turnip; whence he is of opinion that every farmer who cultivates the common turnip ſhould always have part of his farm laid out in the cultivation of this root. For his mode of culture, &c. ſee Agriculture, n° 170; and under n° 173 of the ſame article is given an account of Mr Robins's method of raiſing them. In another letter from Sir Thomas Beevor, Bath Papers, vol. iii. p. 489. he expreſſes his hope that the turnip-rooted cabbages he had would laſt until he ſhould have plenty of graſs for all
103 **Compariſon of the quantity of feed in this and in the common turnip.**
his ſtock. To make a comparative eſtimation of the quantity of food yielded by the turnip-rooted cabbage and the common turnip, he ſelected ſome of each kind, and having girted them with as much accuracy as poſſible, he found, that a turnip-rooted cabbage of 18 inches circumference weighed 5¼ lb. and a common turnip of the ſame ſize only 3¾ lb; on trying others, the general reſult was found to be in that proportion. Had they been weighed with the tops, the ſuperiority of the turnip-rooted cabbage would have been greater, the tops of them being remarkably buſhy. They were weighed in the month of March; but had this been done at Chriſtmas, our author is of opinion that the difference would not have been ſo great; tho' he reckons this very circumſtance of their continuing ſo long to afford a nouriſhing food, an inſtance of their excellency above almoſt every other vegetable whatever.

104 **Other experiments.**

In the fourth volume of the ſame work, Sir Thomas gives an account of another experiment on five acres of turnip-rooted cabbage, four of which were eaten upon the field, the other was pulled up and carried to the ſtables and ox-houſes. They were ſown and cultivated as other turnips; the beaſts were put to them on the 12th of April, and continued feeding upon them till the 11th of May. The cattle fed for this ſpace of time were, 12 Scotch bullocks weighing 40 ſtone each; eight homebreds, two years old; fifteen cows full-ſized; 40 ſheep; 18 horſes; beſides 40 ſtore hogs and pigs, which lived upon the broken pieces and offal without any other allowance for the whole four weeks. The whole value of the plant, excluſive of the feeding of the pigs, amounted, according to our author's calculation, to L. 18; and he ſays that the farmers would willingly give this ſum in the ſpring for feeding as many cattle "becauſe it enables them to ſave the young ſhooting graſs (which is ſo frequently injured by the tread of the cattle in the froſty nights) until it gets to ſuch a length and thickneſs as to be afterwards but little affected by the ſummer's drought. Beſides this, the tops or leaves are in the ſpring much more abundant, and much better food than thoſe of the common turnip, as already obſerved; and they continue in full perfection after all the common turnips are rotten or worthleſs.

104
Diſadvantages attending the cultivation of this plant.

The diſadvantages attending the cultivation of turnip-rooted cabbages are, that they require a great deal of time and pains to take them up out of the ground, if they are to be carried off the field; and if fed where they grow, it requires almoſt an equal labour to take up the pieces left by the cattle. A great deal of earth is alſo taken up along with the root; and the ſubſtance of the latter is ſo firm and ſolid, that they muſt be cut in two in order to enable the cattle to eat them. To obviate ſome of theſe objections, it will be proper to ſow the plants on rich and very light land; and as they are longer in coming to the hoe than the common turnip, it will be proper to ſow them about the beginning of June.

105
Why every farmer ought to cultivate this plant.

In another experiment upon this plant by the ſame gentleman, the cabbages held out during the long and ſevere froſt of 1788 without the leaſt injury, though it deſtroyed three-fourths of all the common turnips in the neighbourhood. On the 21ſt of April 1789, the average produce of an acre was found to be ſomewhat more than 24½ tons, though the tops had not ſprouted above three inches. Conſidering the precariouſneſs of turnips and other crops, Sir Thomas is deciſively of opinion, that all farmers ought to have as many turnip-rooted cabbages as would afford and enſure them a full proviſion for their cattle for about three or four weeks during the latter part of the ſpring. This quantity he reckons ſufficient, as the conſumption, particularly when drawn and carried off the land, is attended with more trouble and expence than that of common turnips, eſpecially if the ſoil be wet and heavy. In another letter, dated May 3. 1790, Sir Thomas Beevor once more ſets forth the advantages of having a crop of theſe vegetables during the ſpring ſeaſon. "In conſequence (ſays he) of the very cold weather we have had here, the graſs is but juſt ſpringing: as the turnips are wholly eaten up, it occaſions much diſtreſs among the farmers for want of ſome green vegetable food for their ſheep and cattle; whereas, by the aſſiſtance of my turnip-rooted cabbages, I have abundance of the beſt and moſt nutritive food that can be found them." He then proceeds to recommend their culture "for the ſupport of almoſt all live ſtock for the three laſt weeks of April, or firſt week of May, when the graſs ſhoots late."

In the 4th volume of the Tranſactions of the Society for encouraging Arts, Mr Robins, who received a premium for raiſing the greateſt quantity of this plant, informs us, that the ſoil on which it grew was a *ſtone braiſh*, inclining to ſand, not worth more than 10s. per acre; the preparation the ſame as for turnips. The manure was a compoſt of earth and dung, which he finds to anſwer better than dung. The ſeed was ſown about the beginning of April on a clean ſpot of ground, and he commonly uſes an old paſture where the ſheep-fold has been in the winter, after taking away the dung, and digging it very ſhallow; "as the roots of the young plants (ſays he) might ſoon reach the dung or ſalts, which muſt conſequently be left, in order to force them out of the fly's way." Theſe inſects, our author obſerves, are extremely fond of the turnip-rooted cabbage; much more ſo, he believes, than of common turnips. About the middle of June they ſhould be planted out upon one-bout ridges raiſed by a double plough made for the purpoſe. Seven thouſand plants are ſufficient for one acre; but if only ſix are uſed, the roots will be the larger.

106
Number of ſheep fed by an acre of turnip-rooted cabbages.

To determine how many ſheep might be kept upon an acre of turnip-rooted cabbage, our author ſhut up 200 ewes with their lambs upon a piece of poor paſture-land of no great extent; the whole not exceeding ten acres. One ton was found ſufficient for keeping them in ſufficient health for a day. On giving them a larger piece of ground to run over, though it had been eat all winter and late in the ſpring; yet with this trifling aſſiſtance 13 tons of turnip-cabbage were made to ſerve 18 days; at the end of which the ewes and lambs were found very much improved, which could not have been expected from four acres of turnips in the month of April, the time that theſe were fed.

107
Experiments at Cullen-Houſe.

From ſome trials made on the turnip-rooted cabbage at Cullen Houſe in the north of Scotland, it appears that the plant is adapted to the climate of every part of Britain. The firſt trial was made in the year 1784. The ſeeds were ſown about the middle of March in garden-ground properly prepared. The cabbages were tranſplanted about the middle of March that year into a dry light ſoil, and cleaned and dunged with rotten cow-dung, in rows three feet diſtant from each other, and at the diſtance of 20 inches in the rows. They were kept very clean, and the earth was hoed up to the roots of the plants; by which means they were probably prevented from attaining the hardneſs they would have otherwiſe arrived at; though, after all, it was neceſſary to cut the roots in two before the ſheep could eat them. When thus cut, the animals eat them greedily, and even preferred them to every other food. The roots continued good for at leaſt a month after the common turnips were unfit for uſe: ſome of them weighed from eight to ten pounds, and a few of them more. Other trials have ſince been made; and it now appears that the plant will thrive very well with the ordinary culture of turnips in the open fields, and in the uſual manner of ſowing broad caſt. From a comparative trial made by the earl of Fife upon this root with ſome others, the quantities produced upon 100 ſquare yards of ground were as follows:

	Stone.	lb.
Common turnips -	92	4
Turnip-rooted cabbage -	88	0
Carrots - -	95	0
Root of Scarcity -	77	0

The turnip-rooted cabbage was planted in lines 20 inches aſunder; the common turnips ſown broad-caſt, and hand-weeded, ſo that they came up very thick, being not more than three or four inches aſunder when full grown. Two cows were fed for ſix weeks with the turnips, two with the turnip-rooted cabbage, and two with the root of ſcarcity for an equal time: the two fed with turnips gave moſt milk, and thoſe with the root of ſcarcity the leaſt. His lordſhip obſerves,

ſerves, however, that carrots thrive better on his farm than any other crop; that his horſes had been fed on them at the rate of two pecks a day, with no corn, and a little more than half the uſual quantity of hay. "They were kept at work every day from ſeven to eight hours, and were never in better order."

Sect. IX. *Swediſh Turnip.*

108 Of the Ruta Baga.

The ruta baga, or Swediſh turnip, is a plant from which great expectations have been formed. It is ſaid to be hardier than the common turnip, and of greater ſweetneſs and ſolidity. It alſo preſerves its freſhneſs and ſucculence till a very late period of its growth, even after it has produced ſeed; on account of which property it has been recommended to the notice of farmers as an excellent kind of ſucculent food for domeſtic animals in the ſpring of the year, when common turnips and moſt other winter crops have failed, and before graſs got up to furniſh an abundant bite for feeding beaſts. This peculiarity, ſo valuable, yet ſo ſingular as to have led many at firſt to doubt the fact, ſeems to be ſufficiently aſcertained by experiment. Dr J. Anderſon † in particular informs us, that it "begins to ſend out its flower-ſtems in the ſpring, nearly about the ſame time with the common turnip; but that the root, in conſequence of that change of ſtate, ſuffers very little alteration. I continued to uſe theſe turnips at my table every day till towards the middle of May; and had I never gone into the garden myſelf, I ſhould not even then have ſuſpected, from the taſte or appearance of the bulb itſelf, that it had been ſhot at all. The ſtems, however, at the ſeaſon I gave over uſing them, were from four to five feet high, and in full flower. I ſhould have continued the experiment longer, had not the quantity I had left for that purpoſe been exhauſted, and a few only left for ſeed.

"This experiment, however, fully proves, that this kind of turnip may be employed as a ſucculent food for cattle till the middle of May at leaſt, in an ordinary year; and I have not the ſmalleſt doubt but it will continue perfectly good for that purpoſe till the end of May in any ſeaſon; at which time graſs and other ſpring-crops can eaſily be had for bringing beaſts forward in fleſh. I can therefore, without heſitation, recommend this plant to the farmer as a moſt valuable ſpring feeding for cattle and ſheep; and for this purpoſe, I think no wiſe farmer ſhould be without a proportion of this kind of turnip to ſucceed the other ſorts after they fail. The profitable method of conſuming it, where it is to be kept very late, is, I am convinced, to cut off the tops with a ſcythe or ſickle when from one foot to eighteen inches high, to induce it to ſend out freſh ſtems, that will continue ſoft and ſucculent to the end; whereas, without this proceſs, the ſtems would become ſticky and uſeleſs.

"I cannot, however, recommend this kind of turnip, from what I have ſeen, as a general crop; becauſe I think it probable, that unleſs in particular circumſtances, the common field-turnips grow to a much larger ſize, and afford upon the whole a more weighty crop. Theſe, therefore, ſhould ſtill continue to be cultivated for winter uſe, the other being reſerved only for ſpring conſumption.

"Experiments are ſtill wanting to aſcertain with certainty the peculiar ſoil and culture that beſt agree with this plant; but from the few obſervations I have hitherto had an opportunity of making upon it, it ſeems to me probable, that it thrives better, and grows to a larger ſize on damp clayey ſoil, than on light ſandy land. But I would not wiſh to be underſtood as here ſpeaking poſitively; I merely throw it out as a hint for future obſervation: on ſpungy ſoil it proſpers.

Though the uſes of this as a garden plant are of much ſmaller conſequence than thoſe above-ſpecified, it may not be improper to remark, that its leaves form a very ſweet kind of greens at any time; and merely for the ſake of the experiment, I cauſed ſome of theſe to be picked off the ſtems of the plants coming to ſeed, on the 4th of June, the king's birth-day, which, on being readied, were found perfectly ſweet, without the ſmalleſt tendency to bitterneſs, which moſt, if not all other kinds of greens that have been hitherto cultivated are known to acquire after their ſtems are conſiderably advanced; no family, therefore, can ever be at a loſs for greens when they have any of this plant in ſeed.

"A root of this kind of turnip was taken up this day (June 15th); the ſeed ſtalks were firm and woody, the pods full formed, and in ſome of them the ſeeds were nearly ripe. The root, however, was as ſoft and ſucculent as at any former period of its growth; nor was the ſkin, as I expected, hard or woody. It was made ready and brought to the table: ſome perſons there thought the taſte as good, if not better, than at any former period of its growth; but I myſelf, perhaps through prejudice, thought it had not quite ſo high a reliſh as in winter: At any rate, however, there can be no doubt, that if ever it could be neceſſary, it might, even now, be employed very properly as a feeding for cattle."

Sect. X. *Turnip-Cabbage.*

This plant is as yet but little known. The ſeed is ſaid to have been brought from the Cape of Good Hope by Mr Haſtings, where it is very common as well as in Holland. It has alſo had an exiſtence in Britain for many years, though not generally known. It has a much greater affinity to the cabbage than to the turnip; and is very hardy, bearing the winter as well, if not better, than common brocoli, and may therefore be conſidered as a valuable acquiſition to the kitchen-garden as well as for cattle. The beſt time for ſowing it for the garden is the end of May or beginning of June, though none of the plants have ever been obſerved to run to ſeed though ſown ever ſo early. Even though ſown in Auguſt at the cauliflower ſeaſon, the greater part ſtood throughout the following ſummer, and did not ſeed till the ſecond ſpring. The plants require nearly the ſame management with brocoli as to diſtance, tranſplanting, &c. and are uſually moſt eſteemed when young, and about the ſize of a moderate garden turnip; thoſe ſown in June will continue all winter. The bulb muſt be ſtripped clean of its thick fibrous rind; after which it may be uſed as a common turnip. The crown or ſprout is very good, but eſpecially in the ſpring, when they begin to run to ſeed. Mr Broughton, from whoſe account in the Bath Papers, vol. v. this article is taken, thinks that the turnip-cabbage is more nutritious than the common turnip. The largeſt bulb he meaſured was 23 inches

109 Method of cultivation.

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† *The Bee*, vol. iii. p. 291.

circumference; but the thickneſs of the rind is ſo great, that ſome farmers imagined that the bulb would be too hard for ſheep. The objection, however, was obviated by Mr Broughton, who gave ſome of the oldeſt and tougheſt bulbs to his ſheep, and found that they not only penetrated through the rind, but even devoured the greateſt part of it.

Sect. XI. *Cabbage.*

110
Quantity raiſed on an acre, &c.

Cabbage has been recommended by long experience as an excellent food for cattle; its uſe as part of human food are alſo well-known. In a paper already quoted from thoſe of the Bath Society, Scotch cabbages are compared, as to their utility in feeding cattle, with turnips, turnip-rooted cabbage, and carrots. In this trial the cabbages ſtand next in value to the carrots; and they are recommended as not liable to be affected by froſt, if they be of the true flat-topped firm kind. Fifty-four tons have been raiſed upon an acre of ground not worth more than 12 ſhillings. There is likewiſe an advantage attending the feeding of cattle with cabbages, viz. that their dung is more in proportion than when fed with turnips or with hay; the former going off more by urine, and the latter having too little moiſture. They alſo impoveriſh the ground much leſs than grain. Mr Billingſley accounts 46 tons per acre a greater crop than he ever read of; but Mr Vagg, in the 4th volume of Bath Papers, gives an account of a crop for which he received a premium from the Society, which was much ſuperior to that of Mr Billingſley. Its extent was 12 acres; the produce of the worſt was 42, and of the beſt 68 tons. They were manured with a compoſt of lime, weeds, and earth, that lay under the hedges round the field, and a layer of dung, all mixed and turned together. About 25 cart-loads of this were ſpread upon an acre with the uſual ploughing given to a common ſummer-fallow; but this, he ſays, "admitting ſuch a crop to exhauſt the manure in ſome degree by its growth, an ample reſtoration will be made by its refuſe ploughed in, and by the ſtirring and cleaning of the ground. The whole expence of an acre, excluſive of the rent, according to Mr Vagg's calculation, amounts to L. 1 : 14 : 1, only four ounces of ſeed being requiſite for an acre. The 12 acres, producing as abovementioned, would feed 45 oxen, and upwards of 60 ſheep, for three months; improving them as much as the graſs in the beſt months of the year, May, June, and July. He recommends ſowing the ſeed about the middle of Auguſt, and tranſplanting the young cabbages where they may be ſheltered from the froſt; and to the neglect of this he aſcribes the partial failure, or at leaſt inferiority of one part of his ground in the crop juſt mentioned, the young plants not being removed till near midſummer, and then in ſo dry a time, that they were almoſt ſcorched up.

111
Of watering cabbages.

In the Farmer's Magazine, vol. ii. p. 217. we have ſeveral pertinent remarks up the culture of this uſeful plant, particularly with regard to watering. "It is a rule (ſays this correſpondent) never to water the plants, let the ſeaſon be as dry as it may; inſiſting that it is entirely uſeleſs. If the land is in fine tilth and well dunged, this may be right, as the expence muſt be conſiderable; but it is probable, in very dry ſeaſons, when the new ſet plants have nothing but a burning ſun on them, that watering would ſave vaſt numbers, and might very well anſwer the expence, if a pond is near, and the work done with a water-cart." He takes notice alſo of another uſe of cabbages, which has not met with the attention it merits, *viz.* the planting of lands where turnips have failed. A late ſown crop of theſe ſeldom turns to any account; but cabbages planted on the ground without any ploughing would prove very beneficial for ſheep late in the ſpring; in all probability (unleſs on light, ſandy, or limeſtone ſoils) of greater value than the turnips, had they ſucceeded.

112
Cabbage cultivated in the Midland diſtrict.

Mr Marſhall obſerves, that in the Midland diſtrict, a valuable ſort of large green cabbage "is propagated, if not raiſed, by Mr Bakewell, who is not more celebrated for his breed of rams than for his breed of cabbages. Great care is obſerved here in raiſing the ſeed, being careful to ſuffer no other variety of the braſſica tribe to blow near ſeed-cabbages; by which means they are kept true to their kind. To this end, it is ſaid, that ſome plant them in a piece of wheat; a good method, provided the ſeed in that ſituation can be preſerved from birds."

113
Diſtance at which they ought to be placed.

The advantage of having large cabbages is that of being able to plant them wide enough from each other, to admit of their being cleaned with the plough, and yet to afford a full crop. The proper diſtance depends in ſome meaſure on the natural ſize of the ſpecies and the ſtrength of the ſoil; the thinner they ſtand, the larger they will grow: but our author is of opinion, that cabbages, as well as turnips, are frequently ſet out too thin. Four feet by two and an half, according to Mr Marſhall, are a full diſtance for large cabbages on a rich ſoil.

Sect. XII. *Parſnips.*

114
An excellent food for cattle.

These, though little uſed in Britain, are highly eſteemed in France and ſome of our neighbouring iſlands as food for cattle. In Brittany particularly, they are thought to be little inferior in this reſpect to wheat; and cows fed with them are ſaid to give as much milk, and of as good quality, as in the ſummer-months. It is alſo very much commended for ſwine which rear young pigs, and for fattening the ſwine themſelves. The author of this paper alſo recommends a method of determining the nutritive qualities of plants by the quantity of mucilage they contain; which may be known by boiling them in water, and then evaporating the decoction: the parſnip, he ſuppoſes, would yield a greater quantity of mucilage than either carrots or potatoes.

Bath Papers, vol. iv. p. 244.

115
Mr Hazard's method of cultivation.

"To cultivate this root (ſays Mr Hazard) ſo as to make it advantageous to the farmer, it will be right to ſow the ſeed in the autumn immediately after it is ripe; by which means the plants will appear early the following ſpring, and get ſtrong before the weeds can riſe to injure them. Neither the ſeeds nor young plants are ever materially injured by froſts; on which account, as well as many others, the autumn is preferable to the ſpring ſowing. The beſt ſoil for them is a rich deep loam, and next to this ſand. They will thrive well in a black gritty ſoil, but not in ſtone-braſh, gravel, or clay; and they are always largeſt in the deepeſt earth. If the ſoil be proper, they do not require much manure. Mr Hazard obtained a very good

Parſnips.

good crop for three years upon the ſame piece of ground without uſing any; but when he laid on about 40 cart loads of ſand per acre upon a ſtiff loam, and ploughed it in, he found it anſwer very well; whence he concludes, that a mixture of ſoils may be proper for this root. The ſeed may be ſown in drills at about 18 inches diſtance from one another, that the plants may be the more conveniently hand or horſe-hoed; and they will be more luxuriant if they undergo a ſecond hoeing, and are carefully earthed, ſo as not to cover the leaves. Such as have not ground to ſpare, or cannot get it in proper condition in autumn, may at that time ſow a plot in their garden, and tranſplant from thence in the latter end of April, or early in the month of May following. The plants muſt be carefully drawn, and the ground well pulveriſed by harrowing and rolling; after which a furrow ſhould be opened with the plough about ſix or eight inches deep, in which the plants ſhould be regularly laid at the diſtance of about ten inches from each other, taking care not to let the root be bent, but for the plant to ſtand perpendicular after the earth is cloſed about it, which ought to be done immediately by means of perſons who ſhould for this purpoſe follow the planter with a hoe. Another furrow muſt be opened about 18 inches from the former, in the ſame direction, and planted as before; and ſo on in like manner until all the plants are depoſited, or the field be completely cropped: and when the weeds appear, hoeing will be neceſſary, and it will afterwards be proper to earth them; but if the leaves of the plants be covered with earth, the roots will be injured. Parſnips ought not to be planted by dibbling, as the ground thus becomes ſo bound, as ſeldom to admit the ſmall lateral fibres with which theſe roots abound to fix in the earth, by which they are prevented from expanding themſelves, and never attain a proper ſize. When circumſtances are properly attended to, there is little doubt that a crop of parſnips would anſwer much bettter than a crop of carrots. They are equal if not ſuperior, in fattening pigs, as they make their fleſh whiter, and the animals themſelves are more fond of theſe roots than of carrots. Horſes eat them greedily when clean waſhed and ſliced among bran, and thrive very well upon them; and black cattle are ſaid likewiſe to approve of them.

The foregoeing are the principal vegetables which have as yet been recommended, or which experience has determined to be proper, to be raiſed as food for men or for cattle.

116
Of the mowing cabbage.

One or two other plants may be juſt noticed, which have lately fallen under the obſervation of thoſe who apply themſelves to the ſtudy of huſbandry, *viz.* the *root of ſcarcity*, and what are called *mowing cabbages*. Concerning the latter, no experiment has yet been made to determine ſufficiently their properties and value. They are mentioned in the Bath Papers † by Sir John Beevor, who had a ſmall parcel of ſeed ſent him; which he ſowed in ſpring, and ſeveral plants were produced. Some of thoſe were cut down three times, and grew into heads again ſo ſpeedily, "that (ſays he) had I had leiſure to have attended to them, I doubt not but that the cuttings might have been repeated; but as there is never on my farm any want of freſh vegetable food for cattle in the ſummer, unleſs I can find them continue to vegetate in like manner during the winter (which mine have not done) or very early in the ſpring, I think they will not prove to me, or any one under the like circumſtances, an object of much value.

117
Root of ſcarcity.

—As to the *root of ſcarcity*, we have nothing to add to what has been ſaid on it under AGRICULTURE, n° 52. Notwithſtanding a great number of experiments, it ſtill appears uncertain whether it be really uſeful or not.

† Vol. v. p. 424.

118
Graſſes.

With regard to *Graſſes*, the moſt uſeful ſpecies have been deſcribed under the article GRASS, and the cultivation of them ſo fully explained under AGRICULTURE, as to require no further enlargement here.

PART II. CULTIVATION of VEGETABLES more properly ARTICLES of COMMERCE.

THESE in general are ſuch as cannot be uſed for food; and are principally flax, hemp, rape, hops and timber of various kinds; and of each of theſe we ſhall treat particularly in the following ſections.

SECT. I. *Of Flax and Hemp.*

119
Linſeed-cake, linſeed itſelf, and linſeed oil, uſed for fattening cattle.

THIS plant is cultivated not only with a view to the common purpoſes of making linen, but for the ſake of its ſeed alſo; and thus forms a moſt extenſive article of commerce, all the oil uſed by painters, at leaſt for common purpoſes, being extracted from this ſeed. The cake which remains after the extraction of the oil is in ſome places uſed as a manure, and in others ſold for fattening of cattle. In the Vale of Glouceſter, Mr Marſhall informs us that it is, next to hay, the main article of ſtall-fattening; though the price is now become ſo great, that it probably now leaves little or no profit to the conſumer, having within a few years riſen from three guineas to ſix and ſix and an half, and the loweſt price being five guineas per ton; and even this is lower than it was lately. Hence ſome individuals have been induced to try the effect of linſeed itſelf boiled to a jelly, and mixed with flour, bran, or chaff with good ſucceſs, as Mr Marſhal has been informed; and even the oil itſelf has been tried for the ſame purpoſe in Herefordſhire. Though this plant is in univerſal culture over the whole kingdom, yet it appears by the vaſt quantity imported, that by far too little ground is employed in that way.

120
Culture of flax in Yorkſhire.

As Mr Marſhall takes notice of its culture only in the county of Yorkſhire, it probably does not make any great part of the huſbandry of the other counties of which he treats; and even in Yorkſhire, he tells us, that its cultivation is confined to a few diſtricts. The kind cultivated there is that called "blea line," or the blue or lead-coloured flax, and this requires a rich dry ſoil for its cultivation. A deep, fat, ſandy loam is perhaps the only ſoil on which it can be cultivated with advantage. If ſown upon old corn-land, it ought to be well cleaned from weeds, and rendered perfectly friable by a ſummer-fallow. Manure is ſeldom or ever ſet on for a line crop; and the ſoil proceſs conſiſts generally of a ſingle plowing. The ſeed-time is the month of May, but much depends on the ſtate of the ſoil at the time of ſowing. "It ſhould neither be wet nor dry; and the ſurface ought to be made as fine as that of a garden bed. Not a clod of the ſize of an egg ſhould re-

Flax and Hemp.

main unbroken." Two buſhels of ſeed are uſually ſown upon an acre: the ſurface, after being harrowed, is ſometimes raked with garden or hay-rakes; and the operation would be ſtill more complete if the clods and other obſtructions, which cannot be eaſily removed, were drawn into the interfurrows. A light hand-roller uſed between the final raking and harrowing would much aſſiſt this operation. The chief requiſite during the time of vegetation is weeding; which ought to be performed with the utmoſt care; and for this reaſon it is particularly requiſite that the ground ſhould be previouſly cleanſed as well as poſſible, otherwiſe the expence of weeding becomes too great to be borne, or the crop muſt be conſiderably injured. It is an irreparable injury, if, through a dry ſeaſon, the plants come up in two crops; or if by accident or miſmanagement they be too thin. The goodneſs of the crop depends on its running up with a ſingle ſtalk without branches: for whenever it ramifies, there the length of the line terminates; and this ramification is the conſequence of its having too much room at the root, or getting above the plants which ſurround them. The branches are never of any uſe, being unavoidably worked off in dreſſing; and the ſtem itſelf, unleſs it bear a due proportion to the length of the crop, is likewiſe worked off among the refuſe. This ramification of the flax will readily be occaſioned by clods on the ground when ſown. A ſecond crop is very ſeldom attended with any profit; for being overgrown with the ſpreading plants of the firſt crop, it remains weak and ſhort, and at pulling time is left to rot upon the land.

Flax is injured not only by drought but by froſt, and is ſometimes attacked, even when got five or ſix inches high, by a ſmall white ſlug, which ſtrips off the leaves to the top, and the ſtalks bending with their weight are thus ſometimes drawn into the ground. Hence if the crop does not promiſe fair at weeding time, our author adviſes not to beſtow further labour and expence upon it. A crop of turnips or rape will generally pay much better than ſuch a crop of flax. The time of flax-harveſt in Yorkſhire is generally in the latter end of July or beginning of Auguſt.

121
His remarks on flax crops.

On the whole, our author remarks, that "the goodneſs of the crop depends in ſome meaſure upon its length; and this upon its evenneſs and cloſeneſs upon the ground. Three feet high is a good length, and the thickneſs of a crow's quill a good thickneſs. A fine ſtalk affords more line and fewer ſhivers than a thick one. A tall thick ſet crop is therefore deſirable. But unleſs the land be good, a thick crop cannot attain a ſufficient length of ſtem. Hence the folly of ſowing flax on land which is unfit for it. Nevertheleſs, with a ſuitable ſoil a ſufficiency of ſeed evenly diſtributed, and a favourable ſeaſon, flax may turn out a very profitable crop. The flax-crop, however, has its diſadvantages: it interferes with harveſt, and is generally believed to be a great exhauſter of the ſoil, eſpecially when its ſeed is ſuffered to ripen. Its cultivation ought therefore be confined to rich graſsland diſtricts, where harveſt is a ſecondary object, and where its exhauſtion may be rather favourable than hurtful to ſucceeding arable crops, by checking the too great rankneſs of rich freſh broken ground.

122
Mr Bartley's experiments.

In the 5th volume of Bath-Papers, Mr Bartley near Briſtol, gives an account of the expences and produce of five acres of flax cultivated on a rich loamy ſand. The total expence was 42 l. 13 s. 4 d. the produce was ten packs of flax at 5 l. 5 s. value 52 l. 10 s. 35 buſhels of linſeed at 5 s. value 8 l. 15 s. the net profit therefore was 18 l. 11 s. 8 d. or 4 l. 13 s. 4 d. per acre. This gentleman is of opinion that flax-growers ought to make it their ſtaple article, and conſider the other parts of their farm as in ſubſerviency to it.

125
Remarks of a Dorſetſhire gentleman.

In the 2d volume of Bath-Papers, a Dorſetſhire gentleman, who writes on the culture of hemp, and flax, gives an account ſomewhat different from that of Mr Marſhall. Inſtead of *exhauſting* crops, he maintains that they are both *ameliorating* crops, if cut without ſeeding; and as the beſt crops of both are raiſed from foreign ſeed, he is of opinion that there is little occaſion for raiſing it in Britain. A crop of hemp, he informs us, prepares the land for flax, and is therefore clear gain to the farmer. "That theſe plants impoveriſh the ſoil," he repeats, "is a mere vulgar notion, devoid of all truth.—The beſt hiſtorical relations, and the verbal accounts of honeſt ingenious planters, concur in declaring it to be a vain prejudice, unſupported by any authority; and that theſe crops really meliorate and improve the ſoil." He is likewiſe of opinion, that the growth of hemp and flax is not neceſſarily confined to rich ſoils, but that they may be cultivated with profit alſo upon poor ſandy ground, if a little expence be laid out in manuring it. "Spalding-moor in Lincolnſhire is a barren ſand; and yet with proper care and culture it produces the beſt hemp in England, and in large quantities. In the iſle of Aſholme, in the ſame county, equal quantities are produced; for the culture and management of it is the principal employ of the inhabitants; and, according to Leland, it was ſo in the reign of Henry VIII. In Marſhland the ſoil is a clay or ſtrong warp, thrown up by the river Ouze, and of ſuch a quality, that it cracks with the heat of the ſun, till a hand may be put into the chinks; yet if it be once covered with the hemp or flax before the heats come on, the ground will not crack that ſummer. When the land is ſandy, they firſt ſow it with barley, and the following ſpring they manure the ſtubble with horſe or cow dung, and plough it under. Then they ſow their hemp or flax, and harrow it in with a light harrow, having ſhort teeth. A good crop deſtroys all the weeds, and makes it a fine fallow for flax in the ſpring. As ſoon as the flax is pulled, they prepare the ground for wheat. Lime, marl, and the mud of ponds, is an excellent compoſt for hemp-lands."

124
Flax and hemp may be cultivated upon poor as well as rich ſoils.

125
Vaſt quantities of flax and hemp imported into Britain.

Our author takes notice of the vaſt quantity of flax and hemp, not leſs than, 11,000 tons imported in the year 1763 into Britain; and complains that it is not raiſed in the iſland, which he thinks might be done, though it would require 60,000 acres for the purpoſe. He obſerves, that the greater part of thoſe rich marſhy lands lying to the weſt of Mendip hills are very proper for the cultivation of hemp and flax; and if laid out in this manner could not fail of turning out highly advantageous both to the landholders and the public at large. "The vaſt quantities of hemp and flax (ſays he) which have been raiſed on lands of the ſame kind in Lincolnſhire marſhes, and the fens of the Iſle of Ely and Huntingdon-ſhire, are a full proof of the truth of my aſſertion. Many hundreds of acres in the above mentioned places, which, for paſturage or graſing, were not worth more than 20 or 25 ſhillings per acre, have been readily let at 4l. the firſt year, 3l. the ſecond, and 2l. the third. The reaſon of this ſuppoſed declining value of land, in proportion to the number of years ſown with flax, is, that it is uſual with them to ſeed it for the purpoſe of making oil, that being the principal cauſe of the land being impoveriſhed.

Sect. II. *Rape or Cole Seed.*

Bath Papers, vol. iv.

126 Advantage of cultivating rape-ſeed.

This, as well as linſeed, is cultivated for the purpoſe of making oil, and will grow almoſt any where. Mr Hazard informs us, that in the north of England the farmers pare and burn their paſture lands, and then ſow them with rape after one ploughing; the crop commonly ſtanding for ſeed, which will bring from 25l. to 30l. per laſt (80 buſhels.) Poor clay, or ſtone-braſh land, will frequently produce from 12 to 16 or 18 buſhels per acre, and almoſt any freſh or virgin earth will yield one plentiful crop; ſo that many in the northern counties have been raiſed, by cultivating this ſeed, from poverty to the greateſt affluence. The ſeed is ripe in July or the beginning of Auguſt; and the threſhing of it out is conducted with the greateſt mirth and jollity.

127 Of cutting and thraſhing the rape ſeed.

The rape being fully ripe, is firſt cut with ſickles, and then laid thin upon the ground to dry; and when in proper condition for threſhing, the neighbours are invited, who readily contribute their aſſiſtance. The threſhing is performed on a large cloth in the middle of the field, and the ſeed put into ſacks and carried home. It does not admit of being carried from the field in the pod in order to be threſhed at home, and therefore the operation is always performed in the field; and by the number of aſſiſtants procured on this occaſion, a field of 20 acres is frequently threſhed out in one day. The ſtraw is burnt for the ſake of its alkali, the aſhes being ſaid to equal the beſt kind of thoſe imported from abroad.

128 Of ſowing it.

The proper time of ſowing rape is the month of June; and the land ſhould, previous to the ſowing, be twice well ploughed. About two pounds of ſeed are ſufficient for an acre; and, according to our author, it ſhould be caſt upon the ground with only the thumb and two fore fingers; for if it be caſt with all the fingers, it will come up in patches. If the plants come up too thick, a pair of light harrows ſhould be drawn along the field length-ways and croſs-ways; by which means the plants will be equally thinned; and when the plants which the harrows have pulled up are withered, the ground ſhould be rolled. A few days after the plants may be ſet out with a hoe, allowing 16 or 18 inches diſtance betwixt every two plants.

129 Tranſplanting recommended.

Mr Hazard ſtrongly recommends the tranſplanting of rape, having experienced the good effects of it himſelf. A rood of ground, ſown in June, will produce as many plants as are ſufficient for 10 acres; which may be planted out upon ground that has previouſly borne a crop of wheat, provided the wheat be harveſted by the middle of Auguſt. One ploughing will be ſufficient for theſe plants; the beſt of which ſhould be ſelected from the ſeed-plot, and planted in rows two feet aſunder and 16 inches apart in the rows. As rape is an excellent food for ſheep, they may be allowed to feed upon it in the ſpring; or the leaves might be gathered, and given to oxen or young cattle: freſh leaves would ſprout again from the ſame ſtalks, which in like manner might be fed off by ewes and lambs in time enough to plough the land for a crop of barley and oats. Planting rape in the beginning of July, however, would be moſt advantageous for the crop itſelf, as the leaves might then be fed off in the autumn, and new ones would appear in the ſpring. Our author diſcommends the practice of ſowing rape with turnips, as the crops injure one another. "Thoſe who look for an immediate profit (ſays he), will undoubtedly cultivate rape for ſeed; but perhaps it may anſwer better in the end to feed it with ſheep: the fat ones might cull it over firſt, and afterwards the lean or ſtore-ſheep might follow them, and be folded thereon: if this is done in autumn ſeaſon, the land will be in good heart to carry a crop of wheat; or where the rape is fed off in the ſpring, a crop of barley might follow. In either caſe rape is profitable to the cultivator; and when it is planted and well earthed round the ſtems, it will endure the ſevereſt winter; but the ſame cannot be advanced in favour of that which is ſown broadcaſt.

130 Sheep may be fed in the ſpring with rape.

Sect. III. *Coriander Seed.*

131 Mr Bartley's experiment.

This is uſed in large quantities by diſtillers, druggiſts and confectioners, and might be a conſiderable object to ſuch farmers as live in the neighbourhood of great towns; but the price is very variable, viz. from 16s. to 42s. per cwt. In the 4th volume of Bath Papers, Mr Bartley gives an account of an experiment made on this ſeed which proved very ſucceſsful. Ten perches of good ſandy loam were ſown with coriander on the 23d of March 1783. Three pounds of ſeed were ſufficient for this ſpot; and the whole expence amounted only to 5s 10d. The produce was 87 pounds of ſeed, which valued at 3d. yielded a profit of 15s. 11d. or 15l. 11s. 4d. per acre. He afterwards made ſeveral experiments on a larger ſcale; but none of the crops turned out ſo well though all of them afforded a good profit.

Sect. IV. *Canary Seed.*

This is cultivated in large quantity in the Iſle of Thanet, where it is ſaid they have frequently 20 buſhels to an acre. Mr Bartley, in the month of March 1783, ſowed half an acre of ground, the ſoil a mixture of loam and clay, but had only eight buſhels and an half, or 17 buſhels per acre. With this produce, however, he had a profit of 4l. 2s. 3d per acre.

Sect. V. *Woad.*

132 Woad eaſily cultivated.

The uſe of this in dyeing is well known, and the conſumption is ſo great, that the raiſing of the plant might undoubtedly be an object to the huſbandman, provided he could get it properly manufactured for the dyers, and could overcome their prejudices. At preſent, the growing of this plant is in a manner monopolized by ſome people in particular places, particularly at Keynſham near Briſtol in England. Mr Bartley informs us, that in a converſation he had with theſe growers, the latter aſſerted, that the growth of woad was peculiar to their ſoil and ſituation. The ſoil about this place is a blackiſh heavy mould, with a conſider-

able

Hops.

able proportion of clay; but works freely: that of Briſlington, where Mr Bartley reſides, an hazal, ſandy loam; nevertheleſs, having ſowed half an acre of this ſoil with woad-ſeed, it throve ſo well, that he never ſaw a better crop at Keynſham. Having no apparatus, however, or knowledge of the manufacture, he ſuffered it to run to ſeed, learning only from the experiment, that woad is very eaſily cultivated, and that the only difficulty is the preparing it for the market.

Sect. VI. *Hops*.

133 Hops forbid by act of parliament.

The uſes of theſe, as an ingredient in malt-liquors, are well known. Formerly, however, they were ſuppoſed to poſſeſs ſuch deleterious qualities, that the uſe of them was forbid by act of parliament in the reign of James VI. But though this act was never repealed, it does not appear that much regard was ever paid to it, as the uſe of hops has ſtill continued, and is found not to be attended with any bad effects on the human conſtitution. The only queſtion, therefore, is, How far the raiſing a crop of them may be profitable to an huſbandman? and indeed this ſeems to be very doubtful.

134 Expence of cultivating them at Caſtle Hedingham.

Mr Arthur Young, in a fortnight's tour through Kent and Eſſex, informs us † that at Caſtle Hedingham he was told by a Mr Rogers, who had a conſiderable hop plantation, that four acres of hop-ground coſt him upwards of 120l. and that the uſual expences of laying out an acre of ground in this way amounted to 34l. 6s. By a calculation of the expences of an acre in Kent, it appeared that the money ſunk to plant an acre there amounted to 32l. 8s. 6d.; that the annual expence was 23l. and the profit no more than 1l. 8s. 1d. In another place, he was informed by a Mr Potter, who cultivated great quantities of hops, that if it were not for ſome extraordinary crops which occurred now and then, nobody would plant them.

135 In Eſſex.

In Eſſex, the expences of an hop-plantation are ſtill greater than thoſe we have yet mentioned; an acre many years ago requiring 75l. to lay it out on hops, and now not leſs than 100l. the annual expence being eſtimated at 31l. 1s. while the produce commonly does not exceed 32l.

In the neighbourhood of Stow-market in this county, Mr Young informs us, there are about 200 acres planted with hops, but "18 or 20 are grubbed up within two years, owing to the badneſs of the times." Here they are planted on a black looſe moor, very wet and boggy; and the more wet the better for the crop, eſpecially if the gravel which conſtitutes the bottom, be not more than three feet from the ſurface. In preparing the ground for hops, it is formed into beds 16 feet wide, ſeparated from each other by trenches. In theſe beds they make holes ſix feet aſunder, and about 12 inches diameter, three rows upon a bed. Into each hole they put about half a peck of very rotten dung or rich compoſt; ſcatter earth upon it, and plant ſeven ſets in each; drawing earth enough to them afterwards to form ſomething of an hillock. A hop garden, Mr Young informs us, "will laſt almoſt for ever, by renewing the hills that fail, to the amount of about a ſcore annually; but it is reckoned better to grub up and new-plant it every 20 or 25 years."

Cultivation of fruit.

136 Profit of breaking up hop-land precarious.

In this volume of the annals, Mr Young informs us, that "one profit of hop-land is that of breaking it up. Mr Potter grubbed up one garden, which failing, he ploughed and ſowed barley, the crop great; then mazagan beans, two acres of which produced 16 quarters and five buſhels. He then ſowed it with wheat, which produced 13 quarters and four buſhels and an half; but ſince that time the crops have not been greater than common. The ſame gentleman has had 10 quarters of oats after wheat." In the ninth volume of the ſame work, however, we have an account of an experiment by Mr Le Bland of Sittingbourn in Kent, of grubbing up 12 acres of hop-ground which was not attended with any remarkable ſucceſs. Part of the hops were grubbed up in the year 1781, and mazagan beans ſown in their ſtead; but by reaſon of the ſeed being bad, and the dry ſummer, the crop turned out very indifferent. Next year the remainder of the hops were grubbed up, and the whole 12 acres ſown with wheat; but ſtill the crop turned out very bad, owing to the *wet* ſummer of that year. It was next planted with potatoes, which turned out well; and ever ſince that time the crops have been good. This gentleman informs us, the perſon who had the hop-ground abovementioned did not loſe leſs by it than 1500l.

137 Culture of hops in Norfolk on the decline.

The culture of hops ſeems to be confined in a great meaſure to the ſouthern counties of England; for Mr Marſhall mentions it as a matter of ſurpriſe, that in Norfolk he ſaw a "tolerably large hop garden." The proprietor informed him, that three or four years before there had been 10 acres of hops in the pariſh (Blowfield) where he reſided: which was more than could be collected in all the reſt of the county; but at that time there were not above five; and the culture was daily declining, as the crops, owing to the low price of the commodity, did not defray the expence.

From all this it appears, that hops are perhaps the moſt uncertain and precarious crop on which the huſbandman can beſtow his labour. Mr Young is of opinion, that ſome improvement in the culture is neceſſary; but he does not mention any, excepting that of planting them in eſpaliers. This method was recommended both by Mr Rogers and Mr Potter abovementioned. The former took the hint from obſerving, that a plant which had been blown down, and afterwards ſhot out horizontally, always produced a greater quantity than thoſe which grew upright. He alſo remarks, that hops which are late picked carry more next year than ſuch as are picked early; for which reaſon he recommends the late picking. The only reaſon for picking early is, that the hops appear much more beautiful than the others.

Sect. VII. *Cultivation of Fruit*.

In Herefordſhire and Glouceſterſhire the cultivation of fruit for the purpoſe of making a liquor from the juice, forms a principal part of their huſbandry. In Devonſhire alſo conſiderable quantities of this kind of liquor are made, though much leſs than in the two counties abovementioned.

138 Fruits cultivated in Herefordſhire and Glouceſterſhire.

The fruits cultivated in Herefordſhire and Glouceſterſhire are, the apple, the pear, and the cherry. From the two firſt are made the liquors named *cyder* and *perry*; but though it is probable that a liquor of ſome value might be made from cherries alſo, it does not appear

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† *Annals of Agriculture*, vol. ii.

139 Varieties of fruits entirely artificial.

140 Varieties cannot be made permanent.

pear to have ever been attempted. Mr Marſhall remarks, that nature has furniſhed only one ſpecies of pears, and apples, *viz.* the common crab of the woods and hedges, and the wild pear, which is likewiſe pretty common. The varieties of theſe fruits are entirely artificial, being produced not by ſeed, but by a certain mode of culture; whence it is the buſineſs of thoſe who wiſh to improve fruit therefore, to catch at ſuperior accidental varieties; and having raiſed them by cultivation to the higheſt perfection of which they are capable, to keep them in that ſtate by artificial propagation. Mr Marſhall, however, obſerves, that it is impoſſible to make varieties of fruit altogether permanent, though their duration depends much upon management. “A time arrives (ſays he) when they can no longer be propagated with ſucceſs. All the old fruits which raiſed the fame of the liquors of this country are now loſt, or ſo far on the decline as to be deemed irrecoverable. The *redſtreak* is given up; the celebrated *ſtir-apple* is going off; and the *ſquaſh-pear*, which has probably furniſhed this country with more *champaign* than was ever imported into it, can no longer be got to flouriſh; the ſtocks canker, and are unproductive. In Yorkſhire ſimilar circumſtances have taken place; ſeveral old fruits which were productive within my own recollection are loſt; the ſtocks cankered, and the trees would no longer come to bear.”

Our author controverts the common notion among orchard-men, that the decline of the old fruits is owing to a want of freſh grafts from abroad, particularly from Normandy, from whence it is ſuppoſed that apples were originally imported into this country. Mr Marſhall, however, thinks, that theſe original kinds have been long ſince loſt, and that the numerous varieties of which we are now poſſeſſed were raiſed from ſeed in this country. He alſo informs us, that at Ledbury he was ſhown a Normandy apple-tree, which, with many others of the ſame kind had been imported immediately from France. He found it, however, to be no other than the *bitterſweet*, which he had ſeen growing as a neglected wilding in an Engliſh hedge.

141 Mr Marſhall's directions for raiſing new varieties of fruit.

The proceſs of raiſing new varieties of apples, according to Mr Marſhall, is ſimple and eaſy. “Elect (ſays he) among the native ſpecies individuals of the higheſt flavour; ſow the ſeeds on a highly enriched ſeed-bed. When new varieties, or the improvement of old ones, are the objects, it may perhaps be eligible to uſe a frame or ſtove; but where the preſervation of the ordinary varieties only is wanted, an ordinary loamy ſoil will be ſufficient. At any rate, it ought to be perfectly clean at leaſt from root weeds, and ſhould be double dug from a foot to 18 inches deep.—The ſurface being levelled and raked fine, the ſeeds ought to be ſcattered on about an inch aſunder, and covered about half an inch deep with ſome of the fineſt mould previouſly raked off the bed for that purpoſe. During ſummer the young plants ſhould be kept perfectly free from weeds, and may be taken up for tranſplantation the enſuing winter; or if not very thick in this ſeed-bed, they may remain in it till the ſecond winter.

142 Of the nurſery ground.

The nurſery ground ought alſo to be enriched, and double dug to the depth of 14 inches at leaſt; though 18 or 20 are preferable. The ſeedling plants ought to be ſorted agreeably to the ſtrength of their roots, that they may riſe evenly together. The top or downward roots ſhould be taken off, and the longer ſide rootlets ſhortened. The young trees ſhould then be planted in rows three feet aſunder, and from 15 to 18 inches diſtant in the rows; taking care not to cramp the roots, but to lead them evenly and horizontally among the mould. If they be intended merely for ſtocks to be grafted, they may remain in this ſituation until they be large enough to be planted out; though, in ſtrict management, they ought to be re-tranſplanted two years before their being transferred into the orchard, “in freſh but unmanured double-dug ground, a quincunx four feet apart every way.” In this ſecond tranſplantation, as well as in the firſt, the branches of the root ought not to be left too long, but to be ſhortened in ſuch a manner as to induce them to form a globular root, ſufficiently ſmall to be removed with the plant; yet ſufficiently large to give it firmneſs and vigour in the plantation

143 Method of chooſing the plants.

Having proceeded in this manner with the ſeed-bed, our author gives the following directions. “Select from among the ſeedlings the plants whoſe wood and leaves wear the moſt *apple-like* appearance. Tranſplant theſe into a rich deep ſoil in a genial ſituation, letting them remain in this nurſery until they begin to bear. With the ſeeds of the faireſt, richeſt, and beſt flavoured fruit repeat this proceſs; and at the ſame time, or in due ſeaſon, engraft the wood which produced this fruit on that of the richeſt, ſweeteſt, beſt-flavoured apple: repeating this operation, and transferring the ſubject under improvement from one tree and ſort to another, as richneſs, flavour, or firmneſs may require; continuing this double mode of improvement until the deſired fruit be obtained. There has, no doubt, been a period when the improvement of the apple and pear was attended to in this country; and ſhould not the ſame ſpirit of improvement revive, it is probable that the country will, in a courſe of years, be left deſtitute of valuable kinds of theſe two ſpecies of fruit; which, though they may in ſome degree be deemed objects of luxury, long cuſtom ſeems to have ranked among the neceſſaries of life.”

144 Mr Grimwood's opinion of the degeneracy of apples.

In the fourth volume of Bath Papers, Mr Grimwood ſuppoſes the degeneracy of apples to be rather imaginary than real. He ſays, that the evil complained of “is not a real decline in the quality of the fruit, but in the tree; owing either to want of health, the ſeaſon, ſoil, mode of planting, or the ſtock they are grafted on being too often raiſed from the ſeed of apples in the ſame place or county.—I have not a doubt in my own mind, but that the trees which are grafted on the ſtocks raiſed from the apple-pips are more tender than thoſe grafted on the real crab-ſtock; and the ſeaſons in this country have, for many years paſt, been unfavourable for fruits, which add much to the ſuppoſed degeneracy of the apple. It is my opinion, that if planters of orchards would procure the trees grafted on real crab-ſtocks from a diſtant country, they would find their account in ſo doing much overbalance the extra expence of charge and carriage.

145 Mr Gillingwater's opinion.

In the ſame volume, Mr Edmund Gillingwater aſſigns as a reaſon for the degeneracy of apples the mixture of various farina, from the orchards being too near each other. In conſequence of this notion, he alſo thinks that the old and beſt kinds of apple-trees are not loſt, but only corrupted from being planted too near bad neighbours: "Remove them (ſays he) to a ſituation where they are not expoſed to this inconvenience, and they will immediately recover their former excellency." This theory, however, is not ſupported by a ſingle experiment.

146
Mr Samuel's opinion of the method of recovering the beſt fruit.

In this volume alſo Mr Richard Samuel expreſſes his concern at the "preſent neglect of orchards, where the old trees are decaying, without proper proviſion being made for the ſucceeding age; for if a farmer plants freſh trees (which does not frequently happen), there is ſeldom any care taken to propagate the better ſorts, as his grafts are uſually taken promiſcuouſly from any ordinary kind moſt eaſily procured in the neighbourhood." His remedy is to collect grafts from the beſt trees; by which means he ſuppoſes that the ſuperior kinds of fruit would ſoon be recovered. To a care of this kind he attributes the ſuperiority of the fruit in the neighbourhood of great towns to that in other places.

147
Cultivation, &c. of fruit-trees.

With regard to the method of cultivating fruit-trees, it is only neceſſary to add, that while they remain in the nurſery, the intervals betwixt them may be occupied by ſuch kitchen ſtuff as will not crowd or overſhadow the plants; keeping the rows in the mean time perfectly free from weeds. In pruning them, the leader ſhould be particularly attended to. If it ſhoot double, the weaker of the contending branches ſhould be taken off; but if the leader be loſt. and not eaſily recoverable, the plant ſhould be cut down to within a hand's breadth of the ſoil, and a freſh ſtem trained. The undermoſt boughs ſhould be taken off by degrees, going over the plants every winter; but taking care to preſerve heads of ſufficient magnitude not to draw the ſtems up too tall, which would make them feeble in the lower part. The ſtems in Herefordſhire are trained to ſix feet high; but our author prefers ſeven, or even half a rod in height. A tall ſtemmed tree is much leſs injurious to what grows below it than a low headed one, which is itſelf in danger of being hurt, at the ſame time that it hurts the crop under it. The thickneſs of the ſtem ought to be in proportion to its height; for which reaſon a tall ſtock ought to remain longer in the nurſery than a low one. The uſual ſize at which they are planted out in Herefordſhire is from four to ſix inches girt at three feet high; which ſize, with proper management, they will reach in ſeven or eight years. The price of theſe ſtocks in Herefordſhire is 18d. each. Our author met with one inſtance of crabſtocks being gathered in the woods with a good proſpect of ſucceſs.

148
Method of managing the ground of orchards in Herefordſhire and Glouceſterſhire.

In Herefordſhire it is common to have the ground of the orchards in tillage, and in Glouceſterſhire in graſs; which Mr Marſhall ſuppoſes to be owing to the difference betwixt the ſoil of the two counties; that of Herefordſhire being generally arable, and Glouceſter graſs land. Trees, however, are very deſtructive not only to a crop of corn, but to clover and turnips; though tillage is favourable to fruit-trees in general, eſpecially when young. In graſs grounds their progreſs is comparatively ſlow, for want of the earth being ſtirred about them, and by being injured by the cattle, eſpecially when low-headed and drooping. After they begin to bear, cattle ought by all means to be kept away from them, as they not only deſtroy all the fruit within their reach, but the fruit itſelf is dangerous to the cattle, being apt to ſtick in their throats and choak them. Theſe inconveniences may be avoided, by eating the fruit grounds bare before the gathering ſeaſon, and keeping the boughs out of the way of the cattle: but Mr Marſhall is of opinion, that it is wrong to plant orchards in graſs land. "Let them (ſays he) lay their old orchards to graſs; and if they plant, break up their young orchards to arable. This will be changing the courſe of huſbandry, and be at once beneficial to the land and the trees.

149
Indolence of the farmers in theſe parts complained of.

Our author complains very much of the indolent and careleſs method in which the Herefordſhire and Glouceſterſhire farmers manage their orchards. The natural enemies of fruit-trees (ſays he) are, 1. A redundancy of wood. 2. The miſletoe. 3. Moſs. 4. Spring froſts. 5. Blights. 6. Inſects. 7. An exceſs of fruit. 8. Old age.

150
Exceſs of wood how remedied.

1. A redundancy of wood is prejudicial, by reaſon of the barren branches depriving thoſe which bear fruit of the nouriſhment which ought to belong to them. A multitude of branches alſo give the winds ſuch an additional power over the tree, that it is in perpetual danger of being overthrown by them: trees are likewiſe thus injured by the damps and want of circulation of air, ſo that only the outer branches are capable of bringing fruit to maturity. "It is no uncommon ſight (ſays he) to ſee trees in this diſtrict, with two or three tires of boughs preſſing down hard upon one another, with their twigs ſo intimately interwoven, that even when the leaves are off, a ſmall bird can ſcarcely creep in among them.

151
Miſletoe how deſtroyed.

2. The miſletoe in this country is a great enemy to the apple-tree. It is eaſily pulled out with hooks in froſty weather, when, being brittle, it readily breaks off from the branches. It likewiſe may be applied to a profitable purpoſe, ſheep being as fond of it as of ivy.

152
Moſs.

3. Moſs can only be got the better of by induſtry in clearing the trees of it; and in Kent there are people who make it their profeſſion to do ſo.

153
Spring froſts.

4. Spring-froſts, eſpecially when they ſuddenly ſucceed rain, are great enemies to fruit-trees; dry froſts only keep back the bloſſoms for ſome time. Art can give no farther aſſiſtance in this caſe than to keep the trees in a healthy and vigorous ſtate, ſo as to enable them to throw out a ſtrength of bud and bloſſom; and by keeping them thin of wood, to give them an opportunity of drying quickly before the froſt ſet in.

154
Blights an uncertain term.

5. Blight is a term, as applied to fruit trees, which Mr Marſhall thinks is not underſtood. Two bearing years, he remarks, ſeldom come together; and he is of opinion, that it is the mere exhauſting of the trees by the quantity of fruit which they have carried one year, that prevents them from bearing any the next. The only thing therefore that can be done in this caſe is, to keep the trees in as healthy and vigorous a ſtate as poſſible.

155
Method propoſed of deſtroying waſps.

6. Inſects deſtroy not only the bloſſoms and leaves, but ſome of them alſo the fruit, eſpecially pears. In the year 1783 much fruit was deſtroyed by waſps. Mr Marſhall adviſes to ſet a price upon the female waſps in the ſpring; by which theſe miſchievous inſects would perhaps be exterminated, or at leaſt greatly leſſened.

156
Of an exceſs of fruit.

7. An exceſs of fruit ſtints the growth of young trees, and renders all in general barren for two or three years; while in many caſes the branches are broken

off by the weight of the fruit; and in one caſe Mr Marſhall mentions, that an entire tree had ſunk under its burthen. To prevent as much as poſſible the bad effects of an exceſs of fruit, Mr Marſhall recommends "to graft in the boughs," and when fully grown, to thin the bearing branches; thus endeavouring like the gardener, to grow fruit every year."

157 Duration of fruit-trees may be lengthened

8. Though it is impoſſible to prevent the effects of old age, yet by proper management the natural life of fruit trees may be conſiderably protracted. The moſt eligible method is to graft ſtocks of the native crab in the boughs. The decline of the tree is preceded by a gradual decline of fruitfulneſs, which long takes place before the tree manifeſts any ſign of decay. During this decline of fruitfulneſs, there is a certain period when the produce of a tree will no longer pay for the ground it occupies, and beyond this period it ought by no means to be allowed to ſtand. In the Vale of Glouceſter, however, our author ſaw an inſtance of ſome healthy bearing apple-trees, which then had the *ſecond* tops to the ſame ſtems. The former tops having been worn out, were cut off, and the ſtumps ſaw-grafted. Our author obſerves, that the pear-tree is much longer lived than the apple, and ought never to be planted in the ſame ground. He concludes with the following general obſervation: "Thus conſidering fruit-trees as a crop in huſbandry, the general management appears to be this: Plant upon a recently broken-up worn out ſward. Keep the ſoil under a ſtate of arable management, until the trees be well grown: then lay it down to graſs, and let it remain in ſward until the trees be removed, and their roots be decayed; when it will again require a courſe of arable management."

158 Mr Marſhall's obſervation on the culture of timber-trees.

Sect. VIII. *Of Timber-Trees.*

The importance and value of theſe is ſo well known, that it is ſuperfluous to ſay any thing on that ſubject at preſent: notwithſtanding this acknowledged value, however, the growth of timber is ſo ſlow, and the returns for planting ſo diſtant, that it is generally ſuppoſed for a long time to be a poſitive loſs, or at leaſt to be attended with no profit. This matter, however, when properly conſidered, will appear in another light. There are four diſtinct ſpecies of woodlands: *viz.* woods, timber-groves, coppices, and woody waſtes. The woods are a collection of timber-trees and underwood; the timber-groves contain timber-trees without any underwood; and the coppices are collections of underwood alone. All theſe turn out to advantage ſooner or latter, according to the quick or ſlow growth of the trees, and the ſituation of the place with reſpect to certain local advantages. Thus in ſome places underwood is of great conſequence, as for rails, hoops, ſtakes, fuel, &c. and by reaſon of the quickneſs of its growth it may be accounted the moſt profitable of all plantations. An oſier-bed will yield a return of profit in the ſecond or third year, and a coppice in 15 or 20 years; while a plantation of oaks will not arrive at perfection in leſs than a century. This laſt period is ſo long, that it may not unreaſonably be ſuppoſed likely to deter people for making ſuch plantations of this kind, as few are willing to take any trouble for what they are never to ſee in perfection. It muſt be remembered, however, that though the trees themſelves do not come to perfection in a ſhorter time, the value of the ground will always increaſe in proportion to their age. Thus, ſays one author upon this ſubject, "we have ſome knowledge of a gentleman now living, who during his lifetime has made plantations, which in all probability will be worth to his ſon as much as his whole eſtate, handſome as it is. Suppoſing that thoſe plantations have been made 50 or 60 years, and that in the courſe of 20 or 30 more they will be worth L. 50,000; may we not ſay, that at preſent they are worth ſome 20,000l. or 30,000 l? Mr Pavier, in the 4th volume of Bath Papers, computes the value of 50 acres of oak timber in 100 years to be L. 12,100, which is near 50s. annually per acre; and if we conſider that this is continually accumulating without any of that expence or riſk to which annual crops are ſubject, it is probable that timber-planting may be accounted one of the moſt profitable articles in huſbandry. Evelyn calculates the profit of 1000 acres of oakland in 150 years, at no leſs than L. 670,000; but this is moſt probably an exaggeration. At any rate, however, it would be improper to occupy, eſpecially with timber of ſuch ſlow growth, the grounds which either in graſs or corn can repay the trouble of cultivation with a good annual crop.

159 Different kinds of woodlands

160 What plantations will ſooneſt bring in a return of profit.

161 Advantages of planting.

162 Planting meliorates the ſoil.

In the 4th volume of the Bath Papers, Mr Wagſtaffe recommends planting as an auxiliary to cultivation. He brings an inſtance of the ſucceſs of Sir William Jerringham, who made trial of "the moſt unpromiſing ground perhaps that any ſucceſsful planter has hitherto attempted." His method was to plant beech-trees at proper diſtances among Scotch firs, upon otherwiſe barren heaths. "Theſe trees (ſays Mr Wagſtaffe), in a ſoil perhaps without clay or loam, with the heathy ſod trenched into its broken ſtrata of ſand or gravel, under the protection of the firs, have laid hold, though ſlowly, of the ſoil; and accelerated by the ſuperior growth of the firs, have proportionally riſen, until they wanted an enlargement of ſpace for growth when the firs were cut down." He next proceeds to obſerve, that when the firs are felled, their roots decay in the ground; and thus furniſh by that decay a new ſupport to the ſoil on which the beeches grow: by which means the latter receive an additional vigour, as well as an enlargement of ſpace and freer air; the firs themſelves, though cut down before they arrived at their full growth, being alſo applicable to many valuable purpoſes.

163 Culture of timber-trees recommended by Mr Harries.

In the 6th volume of the Annals of Agriculture, we find the culture of trees recommended by Mr Harries: and he informs us, that the larch is the quickeſt grower and the moſt valuable of all the reſinous timber-trees; but unleſs there be pretty good room allowed for the branches to ſtretch out on the lower part of the trunk, it will not arrive at any conſiderable ſize; and this obſervation, he ſays, holds good of all pyramidal trees. Scotch firs may be planted between them, and pulled out after they begin to obſtruct the growth of the larch. Some of theſe larches he had ſeen planted about 30 years before, which at five feet diſtance from the ground meaſured from four feet to five feet ſix inches in circumference. The moſt barren grounds, he ſays, would anſwer for theſe trees, but better ſoil is required for the oaks. In this paper he takes no-

164 Increaſe of oak-trees. tice of the leaves of one of his plantations of oaks having been almoſt entirely deſtroyed by inſects; in conſequence of which they did not increaſe in bulk as uſual: but another which had nearly eſcaped theſe ravages, increaſed at an average one inch in circumference. "A tree four feet round (ſays he), that has timber 20 feet in length, gains by this growth a ſolid foot of timber annually, worth one ſhilling at leaſt, and pays 5 *per cent.* for ſtanding. It increaſes more as the tree gets from five to ſix feet round. I have a reaſonable hope to infer from my inquiry, that I have in my groves 3000 oaks that pay me one ſhilling each per annum, or L.150 a year. My poplars have gained in circumference near two inches, and a Worceſter and witch elm as much. I have lately been informed, that the ſmooth cut of a holy-tree, that meaſures 20 inches and upwards round, is worth to the cabinet-makers 2s. and 6d. per foot.

165 Increaſe of trees in the Marquis of Lanſdowne's plantation. The following table ſhows the increaſe of trees in 21 years from their firſt planting. It was taken from the marquis of Lanſdowne's plantation begun in the year 1765, and the calculation made on the 15th of July 1786. It is about ſix acres in extent, the ſoil partly a ſwampy meadow upon a gravelly bottom. The meaſures were taken at five feet above the ſurface of the ground; the ſmall firs having been occaſionally drawn for poſts and rails, as well as rafters for cottages; and when peeled of the bark, will ſtand well for ſeven years.

	Height in Feet.	Circumference in Feet.	Inch.
Lombardy poplar -	60 to 80	4	8
Arbeal - - -	50 to 70	4	6
Plane - -	50 to 60	3	6
Acacia - - -	50 to 60	2	4
Elm - - -	40 to 60	3	6
Cheſnut - -	30 to 50	2	9
Weymouth pines -	30 to 50	2	5
Cluſter ditto -	30 to 50	2	5
Scotch fir - -	30 to 50	2	10
Spruce ditto -	30 to 50	2	2
Larch - - -	50 to 60	3	10

From this table it appears, that planting of timber-trees, where the return can be waited for during the ſpace of 20 years, will undoubtedly repay the original profits of planting, as well as the intereſt of the money laid out; which is the better worth the attention of a proprietor of land, that the ground on which they grow may be ſuppoſed good for very little elſe. From a comparative table of the growth of oak, aſh, and elm timber, given in the 11th volume of the Annals of Agriculture, it appears that the oak is by much the ſloweſt grower of the three.

166 Of under-wood, &c. With reſpect to the growth of under-wood, which in ſome caſes is very valuable, it is to be remarked, that in order to have an annual fall of it, the whole quantity of ground, whatever its extent may be, ought to be divided into annual ſowings. The exact number of ſowings muſt be regulated by the uſes to which it is intended to be put. Thus if, as in Surrey, ſtakes, elders, and hoops are ſaleable, there ought to be eight or ten annual ſowings; or if, as in Kent, hop-poles are demanded, 14 or 15 will be required; and if, as in Yorkſhire, rails be wanted, or, as in Glouceſterſhire, cordwood be moſt marketable, 18 or 20 ſowings will be neceſſary to produce a ſucceſſion of annual falls. Thus the buſineſs by being divided, will be rendered leſs burthenſome: a certain proportion being every year to be done, a regular ſet of hands will, in proper ſeaſon, be employed; and by beginning upon a ſmall ſcale, the errors of the firſt year will be corrected in the practice of the ſecond, and thoſe of the ſecond in that of the third. The produce of the intervals will fall into regular courſe; and when the whole is completed, the falls will follow each other in regular ſucceſſion. The greateſt objection to this method of ſowing woodlands is the extraordinary trouble in fencing; but this objection does not hold if the ſowings lie at a diſtance from one another; on the contrary, if they lie together, or in plots, the entire plot may be incloſed at once; and if it contain a number of ſowings, ſome ſubdiviſions will be neceſſary, and the annual ſowings of theſe ſubdiviſions may be fenced off with hurdles, or ſome other temporary contrivance; but if the adjoining land be kept under the plough, little temporary fencing will be neceſſary. It muſt be obſerved, however, that in raiſing a woodland from ſeeds, it is not only neceſſary to defend the young plants againſt cattle and ſheep, but againſt hares and rabbits alſo: ſo that a cloſe fence of ſome kind is abſolutely neceſſary. See the articles FENCE and HEDGE.

With regard to the preparation of the ground for raiſing timber, it may be obſerved, that if the ſoil be of a ſtiff clayey nature, it ſhould receive a whole year's fallow as for wheat; if light, a crop of turnips may be taken; but at all events it muſt be made perfectly clean before the tree ſeeds be ſown, particularly from perennial root weeds; as, after the ſeeds are ſown, the opportunity of performing this neceſſary buſineſs is in a great meaſure loſt. If the ſituation be moiſt, the ſoil ſhould be gathered into wide lands, ſufficiently round to let the water run off from the ſurface, but not high. The time of ſowing is either the month of October or March; and the method as follows: 167 Method of ſowing. "The land being in fine order, and the ſeaſon favourable, the whole ſhould be ſown with corn, or pulſe adapted to the ſeaſon of ſowing: if in autumn, wheat or rye may be the crop; but if in ſpring, beans or oats.—Which ever of theſe three ſpecies be adopted, the quantity of ſeed ought to be leſs than uſual, in order to give a free admiſſion of air, and prevent the crop from lodging. The ſowing of the grain being completed, that of the tree-ſeeds muſt be immediately ſet about. Theſe are to be put in drills acroſs the land: acorn and nuts ſhould be dibbled in, but keys and berries ſcattered in trenches or drills drawn with the corner of a hoe, in the manner that gardeners ſow their peaſe. The diſtance might be the quarter of a ſtatute rod, or four feet and one inch and an half. A land chain ſhould be uſed in ſetting out the drills, as not being liable to be lengthened or ſhortened by the weather. It is readily divided into rods: and the quarters may be eaſily marked.

The ſpecies of under-wood to be ſown muſt be determined by the conſumpt of it in the neighbourhood of the plantation. Thus, if ſtakes, hoops, &c. be in requeſt, the oak, hazel, and aſh, are eſteemed as under-wood. Where charcoal is wanted for iron forges, beech is the prevailing underwood. The oak, box, Timber-trees.

box, beech, &c. are all in requeſt in different countries, and the choice muſt be determined by the prevailing demand. As the keys of the aſh ſometimes lie two or even three years in the ground, it will be proper to have the places where they are ſown diſtinguiſhed by ſome particular marks, to prevent them from being diſturbed by the plough after harveſt; as a few beans ſcattered along with them, if the crop be oats; or oats, if the crop be beans. The crop ſhould be *reaped*, not *mown*, at harveſt time, and be carried off as faſt as poſſible. Between harveſt and winter, a pair of furrows ſhould be laid back to back in the middle of each interval, for meliorating the next year's crop, and laying the ſeedling plants dry; while the ſtubble of the unploughed ground on each ſide of the drills will keep them warm during the winter. The next year's crop may be potatoes, cabbages, turnips, or if the firſt was corn, this may be beans; if the firſt was beans, this may be wheat drilled. In the ſpring of the third year the drills which roſe the firſt year muſt be looked over, and the vacancies filled up from thoſe parts which are thickeſt; but the drills of the aſh ſhould be let alone till the fourth year. The whole ſhould afterwards be looked over from time to time; and this, with cultivating the intervals, and keeping the drills free from weeds, will be all that is neceſſary until the tops of the plants begin to interfere.

The crops may be continued for ſeveral years; and if they only pay for the expences, they will ſtill be of conſiderable advantage by keeping the ground ſtirred, and preſerving the plants from hares and rabbits. Even after the crops are diſcontinued, the ground ought ſtill to be ſtirred, alternately throwing the mould to the roots of the plants, and gathering it into a ridge in the middle of the interval. The beſt method of doing this is to ſplit the ground at the approach of winter in order to throw it up to the trees on both ſides; this will preſerve the roots from froſt: gather it again in the ſpring, which will check the weeds, and give a freſh ſupply of air: ſplit again at mid-ſummer, to preſerve the plants from drought: gather, if neceſſary, in autumn, and ſplit as before at the approach of winter. The ſpring and mid-ſummer ploughings ſhould be continued as long as a plough can paſs between the plants.

Whenever the oaks intended for timber are in danger of being drawn up too ſlender for their height, it will be neceſſary to cut off all the reſt at the height of about an handbreadth above the ground; and thoſe deſigned to ſtand muſt now be planted at about two rods diſtant from each other, and as nearly a quincunx as poſſible. The ſecond cutting muſt be determined by the demand there is for the underwood; with only this proviſo, that the timber ſtands be not too much crowded by it: for rather than this ſhould be the caſe, the coppice ſhould be cut, though the wood may not have reached its moſt profitable ſtate. What is here ſaid of the method of rearing oak-trees in woods, is in a great meaſure applicable to that of raiſing other trees in timber-groves. The ſpecies moſt uſually raiſed in theſe are the aſh, elm, beech, larch, ſpruce fir, Weymouth pine, poplar, willow, alder, cheſnut, walnut, and cherry. The three laſt are uſed as ſubſtitutes for the oak and beech, and theſe two for the mahogany.

Part III. Of the CATTLE proper to be employed in FARM-WORK; REARING and MANAGING of them. Of HOGS, POULTRY, &c. MANAGEMENT of BEES. Of the DAIRY. Of MANURES.

SECT. I. *Of the Cattle proper to be employed.*

168 Mr Kedington's experiment on the comparative utility of horſes and oxen.

As great part of the ſtock of an huſbandman muſt always conſiſt of cattle, and one of his principal expences in the maintenance of them, this part of his buſineſs is certainly to be looked upon as one of the moſt important of the whole. The cattle belonging to a farm may be divided into two claſſes, viz. ſuch as are intended for work, and ſuch as are deſigned for ſale. The former are now principally horſes, the oxen formerly employed being fallen into diſuſe, though it does not yet certainly appear that the reaſons for the exchange are ſatisfactory. In the ſecond volume of Bath Papers, we have an account of a comparative experiment of the utility of horſes and oxen in huſbandry by Mr Kedington near Bury in Suffolk, in which the preference is deciſively given to oxen. He informs us, that at the time he began the experiment (in 1779), he was almoſt certain that there was not an ox worked in the whole county; finding, however, the expence of horſes very great, he purchaſed a ſingle pair of oxen, but found much difficulty in breaking them, as the workmen were ſo much prejudiced againſt them, that they would not take the proper pains. At laſt he met with a labourer who undertook the taſk; and the oxen "ſoon became as tractable and as handy, both at ploughing and carting, as any horſes." On this he determined to part with all his cart horſes; and by the time he wrote his letter, which was in 1781, he had not a ſingle horſe, nor any more than ſix oxen; which inconſiderable number performed with eaſe all the work of his farm (conſiſting of upwards of 100 acres of arable land and 60 of paſture and wood), beſides the ſtatute duty on the highways, timber and corn, carting, harrowing, rolling, and every part of rural buſineſs. They are conſtantly ſhoed; their harneſs is the ſame as that of horſes (excepting the neceſſary alterations for difference of ſize and ſhape); they are driven with bridles and bits in their mouths, anſwering to the ſame words of the ploughman and carter as horſes will do. A ſingle man holds the plough, and drives a pair of oxen with reins: and our author informs us, that they will plough an acre of ground in leſs than eight hours time; he is of opinion that they would do it in ſeven. The intervals of a ſmall plantation, in which the trees are ſet in rows ten feet aſunder, are ploughed by a ſingle ox with a light plough, and he is driven by the man who holds it. The oxen go in a cart either ſingle, or one, two, or three, according to the load. Four oxen will draw 80 buſhels of barley or oats in a waggon with eaſe; and if good

Cattle to be employed.

169 Reaſons for preferring oxen to horſes.

of this kind, will travel as faſt as horſes with the ſame load. One ox will draw 40 buſhels in a light cart, which our author thinks is the beſt carriage of any. On the whole, he prefers oxen to horſes for the following reaſons.

1. They are kept at much leſs expence, never eating meal or corn of any kind. In winter they are fed with ſtraw, turnips, carrots, or cabbages; or inſtead of the three laſt, they have each a peck of bran per day while kept conſtantly at work. In the ſpring they eat hay; and if working harder than uſual in ſeed-time, they have bran beſides. When the vetches are fit for mowing, they get them only in the ſtable. After the day's work in ſummer they have a ſmall bundle of hay, and ſtand in the ſtable till they cool; after which they are turned into the paſture. Our author is of opinion, that an ox may be maintained in condition, for the ſame conſtant work as an horſe, for at leaſt 4l. leſs annually.

2. After a horſe is ſeven years old, his value declines every year; and when lame, blind, or very old, he is ſcarce worth any thing; but an ox, in any of theſe ſituations, may be fatted, and ſold for even more than the firſt purchaſe; and will always be fat ſooner after work than before.

3. Oxen are leſs liable to diſeaſes than horſes.

4. Horſes are frequently liable to be ſpoiled by ſervants riding them without their maſter's knowledge, which is not the caſe with oxen.

5. A general uſe of oxen would make beef plentiful, and conſequently all other meat; which would be a national benefit.

170 Difficulty in ſhoeing oxen.

Mr Kedington concludes his paper with acknowledging, that there is one inconvenience attending the uſe of oxen, viz. that it is difficult to ſhoe them; tho' even this, he thinks, is owing rather to the unſkilfulneſs of the ſmiths who have not been accuſtomed to ſhoe theſe animals, than to any real difficulty. He confines them in a pound while the operation is performing.

171 Mr Marſhall's calculations.

Mr Marſhall, in his Rural Economy of the Midland counties, ſhows the advantage of employing oxen in preference to horſes from the mere article of expence, which, according to his calculation, is enormous on the part of the horſes. He begins with eſtimating the number of ſquare miles contained in the kingdom of England; and this he ſuppoſes to be 30,000 of cultivated ground. Suppoſing the work of huſbandry to be done by horſes only, and each ſquare mile to employ 20 horſes, which is about 3 to 100 acres, the whole number uſed throughout Britain would be 600,000; from which deducting one ſixth for the number of oxen employed at preſent, the number of horſes juſt now employed will be 500,000. Admitting that each horſe works ten years, the number of farm-horſes which die annually are no fewer than 50,000; each of which requires full four years keep before he is fit for work. Horſes indeed are broke in at three, ſome at two, years old, but they are, or ought to be, indulged in keep and work till they are ſix; ſo that the coſt of rearing and keeping may be laid at full four ordinary years. For all this conſumption of vegetable produce he returns not the community a ſingle article of food, clothing, or commerce; even his ſkin for economical purpoſes being barely worth the taking off. By working horſes in the affairs of huſbandry, therefore, "the community is loſing annually the amount of 200,000 years keep of a growing horſe;" which at the low eſtimate of five pounds a-year, amounts to a million annually. On the contrary, ſuppoſing the buſineſs of huſbandry to be done ſolely by cattle, and admitting that oxen may be fatted with the ſame expenditure of vegetable produce as that which old horſes require to fit them for full work, and that inſtead of 50,000 horſes dying, 50,000 oxen, of no more than 52 ſtone each, are annually ſlaughtered; it is evident, that a quantity of beef nearly equal to what the city of London conſumes would be annually brought into the market; or, in other words, 100,000 additional inhabitants might be ſupplied with one pound of animal food a-day each; and this without conſuming one additional blade of graſs. "I am far from expecting (ſays Mr Marſhall), that cattle will, in a ſhort ſpace of time, become the univerſal beaſts of draft in huſbandry; nor will I contend, that under the preſent circumſtances of the iſland they ought in ſtrict propriety to be uſed. But I know that cattle, under proper management, and kept to a proper age, are equal to every work of huſbandry, in moſt if not all ſituations: And I am certain, that a much greater proportion than there is at preſent might be worked with conſiderable advantage, not to the community only, but to the owners and occupiers of lands. If only one of the 500,000 carcaſes now loſt annually to the community could be reclaimed, the ſaving would be an object."

Cattle to be employed.

172 A million annually loſt by keeping horſes.

173 No oxen uſed in Norfolk.

174 Objection to them in the Vale of Glouceſter;

In Norfolk our author informs us that horſes are the only beaſts of labour; and that there is not perhaps one ox worked throughout the whole county. It is the ſame in the Vale of Glouceſter, though oxen are uſed in the adjoining counties. Formerly ſome oxen were worked in it double; but they were found to poach the land too much, and were therefore given up. Even when worked ſingle, the ſame objection is made: but, ſays Mr Marſhall, "in this I ſuſpect there is a ſpice of obſtinacy in the old way; a want of a due portion of the ſpirit of improvement; a kind of indolence. It might not perhaps be too ſevere to ſay of the Vale farmers, that they would rather be eaten up by their horſes than ſtep out of the beaten tract to avoid them." Shoeing oxen with whole ſhoes, in our author's opinion, might remedy the evil complained of; but "if not, let thoſe (ſays he) who are advocates for oxen calculate the comparative difference in *wear* and keep, and thoſe who are their enemies eſtimate the comparative miſchiefs of trading; and thus decide upon their value as beaſts of labour in the Vale." In the Cotſwold oxen are worked as well as horſes; but the latter, our author fears, are ſtill in the proportion of two to one: he has the ſatisfaction to find, however, that the former are coming into more general uſe. They are worked in harneſs; the collar and harneſs being uſed as for horſes, not reverſed, as in moſt caſes they are for oxen. "They appear (ſays our author) to be perfectly handy, and work, either at plough or cart, in a manner which ſhows, that although horſes may be in ſome caſes *convenient*, and in moſt caſes *pleaſurable to the driver*, they are by no means *neceſſary* to huſbandry. A convenience uſed in this country is a moveable *harneſs-houſe*, with a ſledge bottom, which is drawn from place to place as occaſion may require. Thus no labour is loſt either by the oxen or their drivers.

175 Uſed in the Cotſwold.

176 Moveable harneſs-houſe.

Cattle to be employed.

117 Why the uſe of oxen is declining in Yorkſhire.

In Yorkſhire oxen are ſtill uſed, though in much fewer numbers than formerly; but our author does not imagine this to be any deciſive argument againſt their utility. The Yorkſhire plough was formerly of ſuch an unwieldy conſtruction, that four or ſix oxen, in yokes, led by two horſes, were abſolutely requiſite to draw it; but the improvements in the conſtruction of the plough have of late been ſo great, that two horſes are found to be ſufficient for the purpoſe; ſo that as Yorkſhire has all along been famous for its breed of horſes, we are not to wonder at the preſent diſuſe of oxen. Even in carriages they are now much diſuſed; but Mr Marſhall aſſigns as a reaſon for this, that the roads were formerly deep in winter, and ſoft to the hoof in ſummer; but now they are univerſally a cauſeway of hard limeſtones, which hurt the feet of oxen even when ſhod. Thus it even appears matter of ſurpriſe to our author that ſo many oxen are employed in this county; and the employment of them at all is to him a convincing argument of their utility as beaſts of draught. The timber carriers ſtill continue to uſe them, even though their employment be ſolely upon the road. They find them not only able to ſtand working every day provided their feet do not fail them, but to bear long hours better than horſes going in the ſame paſture. An ox in a good paſture ſoon fills his belly, and lies down to reſt; but an horſe can ſcarce ſatisfy his hunger in a ſhort ſummer's night.

178 Superiority of oxen to horſes.

Oxen are alſo conſidered as much ſuperior at a difficult pull to horſes; but this he is willing to ſuppoſe ariſes from their uſing half-bred hunters in Yorkſhire, and not the true breed of cart-horſes. "But what (ſays he) are thorough-bred cart-horſes? Why, a ſpecies of ſtrong, heavy, ſluggiſh animals, adapted ſolely to the purpoſe of draught; and according to the preſent law of the country, cannot, without an annual expence, which nobody beſtows upon them, be uſed for any other purpoſe. This ſpecies of beaſts of draught coſt at four years old from 20l. to 30l.; they will, with extravagant keep, extraordinary care and attendance, and much good luck, continue to labour eight or ten years; and may then generally be ſold for five ſhillings a-head. If we had no other ſpecies of animals adapted to the purpoſes of draught in the iſland, cart-horſes would be very valuable, they being much ſuperior to the breed of ſaddle-horſes for the purpoſe of draught. But it appears evident, that were only a ſmall ſhare of the attention paid to the breeding of draught oxen which is now beſtowed on the breeding of cart-horſes, animals equally powerful, more active, leſs coſtly, equally adapted to the purpoſes of huſbandry if harneſſed with equal judgment, leſs expenſive in keep and attendance, much more durable, and infinitely more valuable after they have finiſhed their labours, might be produced. A ſteer, like a colt, ought to be familiarized to harneſs at two or three years old, but ſhould never be ſubjected to hard labour until he be five years old; from which age, until he be 15 or perhaps 20, he may be conſidered as in his prime as a beaſt of draught. An ox which I worked ſeveral years in Surrey, might at 17 or 18 years of age have challenged for ſtrength, agility and ſagacity, the beſt bred cart-horſe in the kingdom."

Sect. II. *Of different Kinds of Horſes, and the Methods of Breeding, Rearing, and Feeding them.*

Different kinds of horſes.

179 Account of the black cart horſe.

The midland counties of England have for ſome time been celebrated on account of their breed of the *black cart-horſe*; though Mr Marſhall is of opinion that this kind are unprofitable as beaſts of draught in huſbandry. The preſent improvement in the breed took its riſe from ſix Zealand mares ſent over by the late Lord Cheſterfield during his embaſſy at the Hague. Theſe mares being lodged at his lordſhip's ſeat at Bretby in Derbyſhire, the breed of horſes thus became improved in that county, and for ſome time it took the lead for the ſpecies of theſe animals. As the improved breed paſſed into Leiceſterſhire, however, through ſome unknown circumſtances, it became ſtill more improved, and Leiceſter has for ſome time taken the lead. It is now found, however, that the very large horſes formerly bred in this diſtrict are much leſs uſeful than ſuch as are of a ſmaller ſize.

180 Horſes belonging to Mr Bakewell deſcribed.

Mr Marſhall deſcribes in magnificent terms one of theſe large horſes, a ſtallion belonging to Mr Bakewell named K (A), which, he ſays, was the handſomeſt horſe he ever ſaw. "He was (ſays he) the fancied *war-horſe* of the German painters; who, in the luxuriance of imagination, never perhaps excelled the natural grandeur of this horſe. A man of moderate ſize ſeemed to ſhrink behind his fore end, which roſe ſo perfectly upright, his ears ſtood (as Mr Bakewell ſays every horſe's ears ought to ſtand) perpendicularly over his fore feet. It may be ſaid, with little latitude, that in grandeur and ſymmetry of form, viewed as a picturable object, he exceeded as far the horſe which this ſuperior breeder had the honour of ſhowing to his Majeſty, and which was afterwards ſhown publicly at London, as that horſe does the meaneſt of the breed." A more *uſeful* horſe, bred alſo by Mr Bakewell, however, is deſcribed as having "a thick carcaſe, his back ſhort and ſtraight, and his legs ſhort and clean: as ſtrong as an ox, yet active as a poney; equally ſuitable for a cart or a lighter carriage."

The ſtallions in this county are bred either by farmers or by perſons whoſe buſineſs it is to *breed* them, and who therefore have the name of *breeders*. Theſe laſt either cover with them themſelves, or let them out to others for the ſeaſon, or ſell them altogether to ſtallion-men who travel about with them to different places.

181 Prices of ſtallions.

—The prices given for them are from 50 to 200 guineas by purchaſe; from 40 to 80 or a hundred by the ſeaſon; or from half a guinea to two guineas by the mare. The mares are moſtly kept by the farmers, and are worked until near the times of foaling, and moderately afterwards while they ſuckle: the beſt time for foaling is ſuppoſed to be the month of March or April; and the time of weaning that of November.—"The price of foals (ſays Mr Marſhall), for the laſt ten years, has been from five to ten pounds or guineas; for yearlings, 10 to 15 or 20; for two-year-olds, 15 to 25 or 30; for ſix-year-olds, from 25 to 40 guineas."

182 Mr Marſhall's obſervations on breeding horſes.

—Our author acknowledges that this breed of horſes, conſidered abſtractedly in the light in which they appear here, is evidently a profitable ſpecies of live ſtock, and as far as there is a market for ſix-years old horſes of this breed, it is profitable to agriculture.

(A) Mr Bakewell diſtinguiſhes all his horſes, bulls, and rams, by the letters of the alphhabet.

Different kinds of horſes.

griculture. "But (ſays he) viewing the buſineſs of agriculture in general, not one occupier in ten can partake of the profit; and being kept in agriculture after they have reached that profitable age, they become indiſputably one of its heavieſt burdens. For beſides a ceſſation of improvement of four or five guineas a year, a decline in value of as much yearly takes place. Even the brood-mares, after they have paſſed that age, may, unleſs they be of a very ſuperior quality, he deemed unprofitable to the farmer."

183 Norfolk breed deſcribed.

Our author complains that the ancient breed of Norfolk horſes is almoſt entirely worn out. They were ſmall, brown muzzled, and light-boned; but they could endure very heavy work with little food: two of them were found quite equal to the plough in the ſoil of that county, which is not deep. The preſent breed is produced by a croſs with the large one of Lincolnſhire and Leiceſterſhire already mentioned. He approves of the Suffolk breed, which (he ſays) are a "half-horſe half-hog race of animals, but better adapted to the Norfolk huſbandry than the Leiceſterſhire breed; their principal fault, in his opinion, is a flatneſs of the rib.—In the Vale of Glouceſter moſt farmers rear their own plough-horſes, breeding of horſes not being practiſed. They are of a very uſeful kind, the colour moſtly black, inclinable to tan colour, ſhort and thick in the barrel, and low on their legs. The price of a ſix-year-old horſe from 25l. to 35l. Some cart-horſes are bred in Cotſwold hills; the mares are worked till the time of foaling, but not while they ſuckle; and the foals are weaned early, while there is plenty of grain upon the ground.

184 Suffolk and Glouceſter Breeds.

185 Yorkſhire horſes.

Yorkſhire, which has been long celebrated for its breed of horſes, ſtill ſtands foremoſt in that reſpect among the Engliſh counties. It is principally remarkable for the breed of ſaddle-horſes, which cannot be reared in Norfolk, though many attempts have been made for that purpoſe. Yorkſhire ſtallions are frequently ſent into Norfolk; but though the foals may be handſome when young, they loſe their beauty when old. In Yorkſhire, on the other hand, though the foal be ever ſo unpromiſing, it acquires beauty, ſtrength, and activity as it grows up. Mr Marſhall ſuppoſes that from five to ten thouſand horſes are annually bred up between the eaſtern Morelands and the Humber.

"Thirty years ago (ſays Mr Marſhall), ſtrong ſaddle-horſes, fit for the road only, were bred in the Vale; but now the prevailing breed is the faſhionable coach-horſe, or a tall, ſtrong, and over-ſized hunter; and the ſhows of ſtallions in 1787 were flat and ſpiritleſs in compariſon with thoſe of 1783." The black cart-horſe, an object of Mr Marſhall's peculiar averſion, is alſo coming into the Vale.

In the breeding of horſes he complains greatly of the negligence of the Yorkſhire people, the mares being almoſt totally neglected; though in the brute creation almoſt every thing depends upon the female.

With regard to the general maintenance of horſes, we have already mentioned in this article, and that of AGRICULTURE, ſeveral kinds of food upon which experiments have been made with a view to determine the moſt profitable mode of keeping them. Perhaps, however, the moſt certain method of aſcertaining this matter is by obſerving the practice of thoſe counties where horſes are moſt in uſe. Mr Marſhall recommends the Norfolk management of horſes as the cheapeſt method of feeding them practiſed any where; which, however, he ſeems willing to aſcribe in a great meaſure to the excellency of their breed. In the winter months, when little work is to be done, their only rack-meat is barley-ſtraw: a reſerve of clover-hay being uſually made againſt the hurry of ſeed-time. A buſhel of corn in the moſt buſy ſeaſon is computed to be an ample allowance for each horſe, and in more leiſure times a much leſs quantity ſuffices. Oats and ſometimes barley, when the latter is cheap and unſaleable, are given; but in this caſe the barley is generally malted, *i. e.* ſteeped and afterwards ſpread abroad for a few days, until it begin to vegetate, at which time it is given to the horſes, when it is ſuppoſed to be leſs heating than in its natural ſtate. Chaff is univerſally mixed with horſe-corn: the great quantities of corn grown in this country afford in general a ſufficiency of *natural* chaff; ſo that *cut chaff* is not much in uſe: the chaff, or rather the awns of barley, which in ſome places are thrown as uſeleſs to the dunghill, are here in good eſteem as provender. Oat-chaff is deſervedly conſidered as being of much inferior quality.—It may here be remarked, that this method of keeping horſes which Mr Marſhall approves of in the Norfolk farmers, is practiſed, and probably has been ſo from time immemorial, in many places of the north of Scotland; and is found abundantly ſufficient to enable them to go through the labour required. In ſummer they are in Norfolk kept out all night, generally in clover leys, and in ſummer their keep is generally clover only, a few tares excepted.

Different kinds of horſes.

186 Norfolk management of horſes recommended.

187 This method followed in many places in Scotland.

188 Calculations of the expence of keeping horſes.

In the fourth volume of the Annals of Agriculture, Mr Young gives an account of the expence of keeping horſes; which, notwithſtanding the vaſt numbers kept in the iſland, ſeems ſtill to be very indeterminate, as the informations he received varied no leſs than from L. 8 to L. 25 a-year. From accounts kept on his own farm of the expence of horſes kept for no other purpoſe than that of agriculture, he ſtated them as follows;

		£.	s.	d.
1763	Six horſes coſt per horſe	10	13	0
1764	Seven do. - -	8	10	11
1765	Eight do. - -	14	6	6
1766	Six do. - -	12	18	9

Average on the whole L. 11 : 12 : 3.

By accounts received from *Northmimus* in Herefordſhire, the expences ſtood as follows:

		£.	s.	d.
1768	Expence per horſe -	20	7	0
1769	- - -	15	8	5
1770	- - -	14	14	2
1771	- - -	15	13	3
1772	- - -	18	4	0
1773	- - -	15	11	8
1774	- - -	14	4	5
1775	- - -	19	0	5
1776	- - -	16	14	5

Average L. 16 : 13 : 1.

On theſe diſcordant accounts Mr Young obſerves, undoubtedly with juſtice, that many of the extra expences depend on the extravagance of the ſervants; while ſome of the apparent ſavings depend either on their careleſſneſs, or *ſtealing* provender to their beaſts privately, which will frequently be done. He concludes, however, as follows: "The more exactly the expence of horſes is examined into, the more advantageous will the uſe of oxen be found. Every day's experience convinces me more and more of this. If horſes kept for uſe alone, and not for ſhow, have proved thus expenſive to me, what muſt be the expence to thoſe farmers who make their fat ſleek teams an object of vanity? It is eaſier conceived than calculated.

SECT. III. *Of the Breeding and Rearing of Black Cattle.*

189 A hornleſs breed deſirable for work.

THESE are reared for two different purpoſes, viz. work, and fattening for ſlaughter. For the former purpoſe, Mr Marſhall remarks, that it is obviouſly neceſſary to procure a breed without horns. This he thinks would be no diſadvantage, as *horn*, though formerly an article of ſome requeſt, is now of very little value. The horns are quite uſeleſs to cattle in their domeſtic ſtate, though nature has beſtowed them upon them as weapons of defence in their wild ſtate; and our author is of opinion that it would be quite practicable to produce a hornleſs breed of black cattle as well as of ſheep, which laſt has been done by attention and perſeverance; and there are now many hornleſs breeds of theſe creatures in Britain. Nay, he inſiſts, that there are already three or four breeds of hornleſs cattle in the iſland; or that there are many kinds of which numbers of individuals are hornleſs, and from theſe by proper care and attention a breed might be formed. The firſt ſtep is to ſelect females; and having obſerved their imperfections, to endeavour to correct them by a well choſen male.

190 Properties requiſite in black cattle.

The other properties of a perfect breed of black cattle for the purpoſes of the diary as well as others, ought, according to Mr Marſhall, to be as follows. 1. The head ſmall and clean, to leſſen the quantity of offal. 2. The neck thin and clean, to lighten the fore-end, as well as to leſſen the collar, and make it ſit cloſe and eaſy to the animal in work. 3. The carcaſe large, the cheſt deep, and the boſom broad, with the ribs ſtanding out full from the ſpine; to give ſtrength of frame and conſtitution, and to admit of the inteſtines being lodged within the ribs. 4. The ſhoulders ſhould be light of bone, and rounded off at the lower point, that the collar may be eaſy, but broad to give ſtrength: and well covered with fleſh for the greater eaſe of draught, as well as to furniſh a deſired point in fattening cattle. 5. The back ought to be wide and level throughout: the quarters long; the thighs thin, and ſtanding narrow at the round bone; the udder large when full, but thin and looſe when empty, to hold the greater quantity of milk; with large dug-veins to fill it, and long elaſtic teats for drawing it off with greater eaſe. 6. The legs (below the knee and hock) ſtraight and of a middle length; their bone, in general, light and clean from fleſhineſs, but with the joints and ſinews of a moderate ſize, for the purpoſes of ſtrength and activity. 7. The fleſh ought to be mellow in the ſtate of fleſhineſs, and firm in the ſtate of fatneſs. 8. The hide mellow, and of a middle thickneſs, though in our author's opinion this is a point not yet well determined.

191 Of rearing calves without milk.

Annals of Agriculture, vol. i. p. 296.

As the milk of cows is always an article of great importance, it becomes an object to the huſbandman, if poſſible, to prevent the waſte of that uſeful fluid, which in the common way of rearing calves is unavoidable. A method of bringing up theſe young animals at leſs expence is propoſed by the Duke of Northumberland. His plan is to make ſkimmed milk anſwer the purpoſe of that which is newly drawn from the teat; and which, he ſuppoſes, might anſwer the purpoſe at one third of the expence of new milk. The articles to be added to the ſkimmed milk are treacle and the common linſeed oil cake ground very fine, and almoſt to an impalpable powder, the quantities of each being ſo ſmall, that to make 32 gallons would coſt only 6d. beſides the ſkimmed milk. It mixes very readily and almoſt intimately with the milk, making it more rich and mucilaginous, without giving it any diſagreeable taſte. The receipt for making it is as follows. Take one gallon of ſkimmed milk, and to about a pint of it add half an ounce of treacle, ſtirring it until it is well mixed; then take one ounce of linſeed oil-cake finely pulveriſed, and with the hand let it fall gradually in very ſmall quantities into the milk, ſtirring it in the mean time with a ſpoon or ladle until it be thoroughly incorporated; then let the mixture be put into the other part of the milk, and the whole be made nearly as warm as new milk when it is firſt taken from the cow, and in that ſtate it is fit for uſe. The quantity of the oil-cake powder may be increaſed from time to time as occaſion requires, and as the calf becomes inured to its flavour. On this ſubject Mr Young remarks, that in rearing calves, there are two objects of great importance. 1. To bring them up without any milk at all; and, 2. To make ſkimmed milk anſwer the purpoſe of ſuch as is newly milked or ſucked from the cow. In conſequence of premiums offered by the London Society, many attempts have been made to accompliſh theſe deſirable purpoſes; and Mr Budel of Wanborough in Surry was rewarded for an account of his method. This was no other than to give the creatures a gruel made of ground barley and oats. Mr Young, however, who tried this method with two calves, aſſures us that both of them died, though he afterwards put them upon milk when they were found not to thrive. When in Ireland he had an opportunity of purchaſing calves at three days old from 20d. to 3s. each; by which he was induced to repeat the experiment many times over. This he did in different ways, having collected various receipts. In conſequence of theſe he tried hay-tea, bean-meal mixed with wheat-flour, barley and oats ground nearly, but not exactly in Mr Budd's method; but the principal one was flax-ſeed boiled into a jelly, and mixed with warm water; this being recommended more than all the reſt. The reſult of all theſe trials was, that out of 30 calves only three or four were reared; theſe few were brought up with barley and oatmeal, and a very ſmall quantity of flax-ſeed jelly; one only excepted, which at the deſire of his coachman was brought up on a mixture of two-thirds of ſkimmed milk and one third of water, with a ſmall addition of flax jelly well diſſolved.

192 MrYoung's experiments.

The ſecond object, viz. that of improving ſkimmed milk, according to the plan of the Duke of Northumberland, ſeems to be the more practicable of the two

Rearing black cattle.

Mr Young informs us, that it has anſwered well with him for two ſeaſons; and two farmers to whom he communicated it gave likewiſe a favourable report.

193 Method of rearing calves in Cornwall.

In the third volume of the ſame work, we are informed that the Cornwall farmers uſe the following method in rearing their calves. "They are taken from the cow from the fourth to the ſixth day; after which they have raw milk from ſix to ten or 14 days. After this they feed them with ſcalded ſkimmed milk and gruel made of ſhelled oats, from three quarts to four being given in the morning, and the ſame in the evening. The common family broth is thought to be as good or better than the gruel, the ſavour of the ſalt being ſuppoſed to ſtrengthen their bowels. The proportion of gruel or broth is about one third of the milk given them. A little fine hay is ſet before them, which they ſoon begin to eat.

194 Mr Crook's method.

In the fifth volume of Bath Papers, we have an account by Mr Crook of a remarkably ſucceſsful experiment on rearing calves without any milk at all. This gentleman, in 1787, weaned 17 calves; in 1788, 23; and in 1789, 15. In 1787, he bought three ſacks of linſeed, value L. 2, 5s. which laſted the whole three years. One quart of it was put to ſix quarts of water; which, by boiling 10 minutes, was reduced to a jelly: the calves were fed with this mixed with a ſmall quantity of tea, made by ſteeping the beſt hay in boiling water. By the uſe of this food three times a day, he ſays that his calves throve better than thoſe of his neighbours which were reared with milk.—Theſe unnatural kinds of food, however, are in many caſes apt to produce a looſeneſs, which in the end proves fatal to the calves. In Cornwall they remedy this ſometimes by giving acorns as an aſtringent; ſometimes by a cordial uſed for the human ſpecies, of which opium is the baſis.

195 Norfolk method, &c.

In Norfolk, the calves are reared with milk and turnips; ſometimes with oats and bran mixed among the latter. Winter calves are allowed more milk than ſummer ones; but they are univerſally allowed new milk, or even to ſuck.—In the middle counties bull-calves are allowed to remain at the teat until they be ſix, nine, or twelve months old, letting them run either with their dams or with cows of leſs value bought on purpoſe. Each cow is generally allowed one male or two female calves. Thus they grow very faſt and become ſurpriſingly vigorous. The method of the dairy-men is to let the calves ſuck for a week or a fortnight according to their ſtrength; next they have new milk in pails for a few meals; after that new and ſkimmed milk mixed; then ſkimmed milk alone, or porridge made with milk, water, ground oats, &c. ſometimes with oil cake, &c. until cheeſe-making commences; after which they have whey-porridge, or ſweet whey in the field, being carefully houſed in the night until the warm weather come in.

196 Of fattening cattle.

With regard to the method of fattening cattle turnips are coming into general uſe throughout Britain. In Norfolk no other method is thought of. The general rule is, to allow them to eat their turnips in the field while the weather remains moderately warm, but to give them under cover when it becomes wet or very cold. In this reſpect, however, there is a conſiderable difference with regard to the manner in which the cattle have been brought up; for ſuch as have been accuſtomed to a ſevere climate will ſtand the winter in the field much better than thoſe which have been brought up under ſhelter. It is likewiſe aſſerted by ſome, with a great deal of probability, that the fleſh of cattle fatted under cover is leſs agreeable than that of ſuch as are allowed to remain in the open air.

Rearing and fattening hogs.

SECT. IV. *Of the Rearing and Fattening of Hogs.*

The practice of keeping theſe animals is ſo general, eſpecially in England, that one ſhould think the profit attending it would be abſolutely indiſputable; and this the more eſpecially when it is conſidered how little nicety they have in their choice of food. From ſuch experiments, however, as have been made, the matter appears to be at leaſt very doubtful, unleſs in particular circumſtances. In the firſt volume of Annals of Agriculture, we have an experiment by Mr Mure of feeding hogs with the cluſter-potato and carrots; by which it appeared, that the profit on large hogs was much greater than on ſmall ones; the latter eating almoſt as much as the former, without yielding a proportionable increaſe of fleſh. The gain was counted by weighing the large and ſmall ones alive; and it was found, that from November 10th to January 5th, they had gained in the following proportion:

197 Mr Mure's experiments.

20 large hogs, - - -	L. 1	3	6
20 ſmall, - - - -	0	7	8
2 ſtag hogs, - - -	1	17	8

On being finiſhed with peaſe, however, it appeared, that there was not any real profit at laſt; for the accounts ſtood ultimately as follow:

Dr.				Cr.			
Value of hogs at putting up,	L. 44	2	0	42 hogs ſold fat at	L. 95	0	0
33 coomb peaſe, at 14s. -	23	2	0				
2 do. 2 buſhels barley, at 14s.	1	15	0				
56 days attendance of one man, at 14d.	3	5	4				
950 buſhels of carrots, and 598 of potatoes, at 3½d. *per* buſhel, -	22	15	8				
	L. 95	0	0		L. 95	0	0

In ſome experiments by Mr Young, related in the ſame volume, he ſucceeded ſtill worſe, not being able to clear his expences. His firſt experiment was attended with a loſs of one guinea *per* hog; the ſecond, with a loſs of 11s. 8d.; the third, of only 3s. In theſe three the hogs were fed with peaſe; given whole in the two firſt, but ground into meal in the laſt. The fourth experiment, in which the hog was fed with Jeruſalem artichokes, was attended with no loſs; but another, in which peaſe were again tried, was attended with a loſs of 4s. Other experiments were tried with peaſe, which turning out likewiſe unfavourable, barley was tried ground along with peaſe and beans. This was attended with a ſmall profit, counting nothing for the trouble of feeding the animals. The expences on two hogs were L. 14 : 13 : 10½, the value L. 15;

11s. $3\frac{1}{2}$d. ſo that there was a balance in his favour of 17s. $4\frac{1}{2}$d. In another experiment, in which the hogs were fed with peaſe and barley ground, the beans being omitted as uſeleſs, there was a profit of 12s. 3d. upon an expence of L. 20 : 15 : 9 ; which our author ſuppoſes would pay the attendance. In this experiment the peaſe and barley meal were mixed into a liquid like cream, and allowed to remain in that ſtate for three weeks, till it became ſour. This was attended in two other inſtances with profit, and in a third with loſs: however, Mr Young is of opinion, that the practice will ſtill be found advantageous on account of the quantity of dung raiſed ; and that the farmer can thus uſe his peaſe and barley at home without carrying them to market.

198 Mr Marſhall's remarks.

Mr Marſhall remarks, that in the Midland diſtrict, oats are preferred to barley as a food both for young pigs and breeding ſows. It is alſo ſuppoſed that young pigs require warm meat to make them grow quickly. Barley-meal and potatoes are uſed in fattening them ; beans and peaſe being generally diſuſed.—In this diſtrict it is common to keep two or three pigs in the ſty along with the old hogs to be fatted. This is done that there may be no waſte; as the young pigs lick out the trough clean when the old ones are ſerved. Mr Marſhall obſerves, that in a confined place the old ones are apt to "lord it too much over the little ones ;" for which reaſon he would have a ſeparate apartment aſſigned to them, with a door ſo ſmall the large ſwine ſhould not be able to get into it.

Sect. V. *Sheep.*

SEE the article PASTURAGE.

Sect. VI. *Rabbits.*

IN particular ſituations theſe animals may be kept to advantage, as they multiply exceedingly, and require no trouble in bringing up. A conſiderable number of them are kept in Norfolk, where many parts, conſiſting of barren hills or heaths, are proper for their reception. They delight in the ſides of ſandy hills, which are generally unproductive when tilled ; but level ground is improper for them. Mr Marſhall is of opinion, that there are few ſandy or other looſe-ſoiled hills which would not pay better in rabbit warrens than any thing elſe. 199 Rabbits more valuable than black cattle or ſheep. " The hide of a bullock (ſays he) is not worth more than $\frac{1}{10}$th of his carcaſe ; the ſkin of a ſheep may, in full wool, be worth from a ſixth to a tenth of its carcaſe ; but the fur of a rabbit is worth twice the whole value of the carcaſe ; therefore ſuppoſing a rabbit to conſume a quantity of food in proportion to its carcaſe, it is, on the principle offered a ſpecies of ſtock nearly three times as valuable as either cattle or ſheep. Rabbit warrens ought to be incloſed with a ſtone or ſod wall : and at their firſt ſtocking, it will be neceſſary to form burrows to them until they have time to make them to themſelves. Boring the ground horizontally with a large augre is perhaps the beſt method that can be practiſed. 200 Method of deſtroying birds of prey. Eagles, kites, and other birds of prey, as well as cats, weaſels and pole-cats, are great enemies of rabbits. The norfolk warreners catch the birds by traps placed on the tops of ſtumps of trees or artificial hillocks of a conical form, on which they naturally alight.—Traps alſo ſeem to be the only method of getting rid of the other enemies: though thus the rabbits themſelves are in danger of being caught.

Sect. VII. *Poultry.*

THOUGH theſe make a part of every huſbandman's ſtock, the keeping of great numbers of them will never be found attended with any advantage; as it is certain they never will pay for the grain neceſſary to ſuſtain them, if that grain muſt be bought. On a farm, therefore, they are only uſeful to pick up what would otherwiſe be waſted ; and even thus we can only count them profitable at certain times of the year; and their number muſt always be regulated by the ſize of the farm.—201 Great number of turkies reared in Norfolk. In Norfolk a great number of turkies are bred, of a ſize and quality ſuperior to thoſe in other parts. Mr Marſhall accounts for their number in the following manner : " It is underſtood in general, that to rear turkies with ſucceſs, it is neceſſary that a male bird ſhould be kept upon the ſpot to impregnate the eggs ſingly ; but the good houſewives of this country know, that a daily intercourſe is unneceſſary ; and that if the hen be ſent to a neighbouring cock previous to the ſeaſon of excluſion, one act of impregnation is ſufficient for one brood. Thus relieved from the expence and diſagreeableneſs of keeping a male bird, moſt little farmers, and many cottagers, rear turkies. This accounts for their number: and the ſpecies and the food they are fatted with (which, I believe, is wholly buck) account for their ſuperior ſize and quality."

202 Poultry will not thrive when confined.

In ſome, ſituations, particularly in the neighbourhood of great towns, it might perhaps be an object to rear conſiderable numbers of poultry, even though ſome part of the farm ſhould be cultivated, merely for their ſubſiſtence. It muſt however, be remembered, that poultry cannot bear confinement. They are ſpoiled, not only by being kept in a houſe, but even in a yard and its environs ; for which reaſon Mr Young informs us that Lord Clarendon conſtantly ſhifts his poultry through different parts of the park in which they are kept. In Norfolk it is cuſtomary to put young goſlings upon green wheat.

Sect. VIII. *Bees.*

THESE may be conſidered as of conſiderable importance in huſbandry, on account of the unlimited demand there is for honey and wax, and the little expence at which it is obtained. 203 Difference of the quantity and quality of honey. It is not, however, to be expected, than in all ſituations the honey produced will either be in equal quantity or of equal quality, This depends on the quantity and quality of the flowers in the neighbourhood to which the bees have acceſs. Thus the honey of Norfolk is of inferior quality to that produced in other parts : owing, as ſome have ſuppoſed to the bees feeding upon the flowers of buck-wheat, which grows in great quantity throughout the county. Mr Marſhall, however, aſcribes its peculiar taſte to the heaths and mooriſh places in Norfolk, to which the bees reſort, and which ſeems to be a natural product of the Norfolk ſoil. He does not however aſſert, that the buck can have no effect upon it ; he owns that the buck-flowers are luſcious and diſagreeable to many people, though thoſe of beans are equally ſo to others; but wiſhes that their imparting any bad quality to honey may be doubted, until poſitive proof be brought to the contrary.

202
Mortality among bees in 1782 accounted for.

The Morelands and Vale of Yorkſhire are remarkable for the quantities of honey they produce; but it is of an inferior quality, owing, as Mr Marſhall ſuppoſes, to the heath. He obſerves, that in the hives ſituated between the heaths and cultivated country, there is a remarkable difference between the vernal and autumnal combs. The former, gathered entirely from the meadows, paſture-lands, trees, and cultivated crops, are in a manner as white as ſnow; the latter brown, and the honey rather like melted roſin than the pure limpid conſiſtence of the former.—In the winter of 1782, a remarkable mortality took place among the bees of this diſtrict; vaſt numbers of hives periſhing gradually, tho' plenty of honey remained. The phenomenon appeared unaccountable; but Mr Marſhall explains it with ſome probability, from a want of what is called *bee-bread*, and which the bees collect from the farina of the flowers, as they do the honey and wax from the nectarium and piſtillum. The farina cannot be obtained until the antheræ are burſt by the ſun, which, in the very cold rainy ſeaſon of 1782, could not be expected, as the influence of the ſun was not only very ſmall, but the farina, when once collected, was liable to be waſhed away by the rains. Hence, while the bread which the bees had collected in ſmall quantity laſted, they continued to live; but when this was exhauſted, they gradually periſhed one after another; for it is now univerſally allowed, that without bee-bread the life of theſe inſects cannot be ſuſtained, even though they have plenty of honey.

Bath Papers, vol. 5.
205
Mr Key's obſervations.

In a paper on the ſubject of bees by Mr John Keys, the farina is ſuppoſed to be uſeful for nouriſhing the young brood, and the honey for the ſupport of the old ones: hence, according to the quantity of farina to be procured the ſtock of bees is limited. In the place where he reſided at the time his letter was wrote (near Pembroke), no more than eight hives could be kept by a ſingle perſon with propriety; but at Cheſhunt in Herefordſhire, where he reſided before, he could keep 12 or 14. In his opinion, none but the good firſt ſwarms ought to be preſerved; the after-ſwarms ſhould be returned to the ſtock, by which means the increaſe of honey would be much greater. "An incorporated ſtock (he ſays) will gather more honey than three or four ſingle ones." Hives of half a buſhel meaſure ought to weigh 20 pounds at leaſt, and larger hives in proportion; and they ought not to be above two years of age. He laments it as a national loſs, that great part of the prime ſwarms are ſuffered to eſcape, from an erroneous opinion about ſigns and hours of ſwarming; "whereas nothing leſs than a *conſtant* watching from ſeven to four, can prevent this loſs, but which the peaſantry will not comply with." Mr Keys has in vain attempted to find an eaſy method of ſwarming them artificially.—For the general method of managing bees, ſee the articles APIS and BEE.

SECT. IX. *Of the management of the Dairy.*

Management of the Dairy.

As this includes not only the proper method of preſerving milk in a wholeſome and uncorrupted ſtate, but the making of butter and cheeſe from it, it may deſervedly be accounted as important a part of huſbandry as any; and accordingly ſeveral treatiſes have been written expreſsly upon the ſubject.

206
Dr Anderſon's opinions on the making of butter.

In the fifth volume of Bath Papers, the ſubject ſeems to be conſidered in as accurate and ſcientific a manner by Dr Anderſon as by any perſon who has treated this matter; at leaſt as far as regards the making of butter. The requiſites for manufacturing this valuable commodity, according to him, are the following:

1. *To have cows of a good quality.* In this we are to attend more to the quantity of cream which the milk of a cow yields, than to the abſolute quantity of milk; and this may commonly be judged of from the thickneſs of it. The ſmall Alderney cows (he ſays) afford the richeſt milk hitherto known; though there are many individuals of different kinds which afford much richer milk than others; and theſe ought carefully to be ſought after, that a good breed may be eſtabliſhed.

2. *To make the cows yield a large quantity of milk.* For this purpoſe they muſt have plenty of food; and of all other kinds the Doctor determines graſs to be the beſt; and that graſs which ſprings up ſpontaneouſly on rich dry ſoils to be the beſt of all. He is of opinion, however, that there is no virtue in *old* paſtures, as many ſuppoſe, more than in *new* ones; and he aſſures us, that he has ſeen much richer butter made from the milk of cows fed upon hay from clover and rye-graſs in the houſe, than ſuch as had liberty to range in old paſture. He thinks, however, that the cows ſhould be permitted to paſture at pleaſure during the mornings and evenings, but at noon ſhould be taken into a houſe, and ſupplied with freſh food. If abundantly fed, they ſhould be milked three times a day; and as great care ſhould be taken that this operation be properly performed, only confidential perſons ſhould be employed. He ſuppoſes that a cow well fed, will give as much milk each time when milked thrice, as when milked only twice.

5. *The qualities of the milk itſelf.* Theſe are reduced by our author to the following aphoriſms. 1. Of the milk drawn from a cow at any time, that which comes firſt is always thinneſt, and continues to increaſe in thickneſs to the very laſt drop. This, as well as all the ſucceeding ones, are proved by experiment; and ſo great is the importance of attending to it, that "the perſon who, by bad milking of his cows, looſes but half a pint of his milk, loſes, in fact as much cream as would be afforded by ſix or eight pints at the beginning, and loſes beſides that part of the cream which alone can give richneſs and high flavour to his butter." 2. When milk throws up cream to the ſurface, that portion which riſes firſt will be thicker, and of better quality, as well as in greater quantity, than that which riſes in a ſecond equal portion of time. 3. Thick milk throws up a ſmaller quantity of cream to the ſurface than ſuch as is thinner; but that cream is of a richer quality. If water be added to that thick milk, it will afford a conſiderably greater quantity of cream than before, but its quality is at the ſame time greatly debaſed. 4. Milk when carried in veſſels to any diſtance, ſo as to ſuffer conſiderable agitation, never throws up cream ſo rich, nor in ſuch quantity, as if the ſame had been put into the milk-pans without any agitation. From theſe aphoriſms, the following corollaries are deducible. 1. The cows ought always

to be milked as near the dairy as poſſible. 2. The milk of different cows ſhould be kept by themſelves, that the good cows may be diſtinguiſhed from the bad. 3. For butter of a very fine quality, the firſt drawn milk ought always to be kept ſeparate from the laſt.

207 Method followed in the Highlands of Scotland.

Our author now commends the method uſed by the Highlanders of Scotland, where every cow is allowed to ſuckle her own calf. The calves are kept in an incloſure till the time of milking, when they are allowed to come to the door. Each calf there is allowed to ſuck its dam as long as the milk-maid pleaſes; when it is driven away, and the woman milks the remainder. Thus they obtain only a ſmall quantity of milk, but of exceeding good quality; and to this practice Dr Anderſon aſcribes the richneſs of the Highland butter, which is uſually attributed to the old graſs in the remote glens of the Highlands. In places where the practice cannot be economically followed, the Doctor recommends to keep the milk which comes firſt, and that which comes laſt ſeparate from each other. The former might be ſold ſweet, or made into cheeſe.

208 Uſeful preparation of ſweet milk.

Another uſe our author mentions, viz. “Take common ſkimmed milk when it begins to turn ſour; put it into an upright churn or barrel with one of its ends out, or any other convenient veſſel; heat ſome water, and pour it into a tub that is large enough to contain with eaſe the veſſel in which the milk was put. Set the veſſel containing the milk into the hot water, and let it remain there for the ſpace of one night. In the morning it will be found that the milk hath ſeparated into two parts; a thick cream like ſubſtance which occupies the upper part of the veſſel, and a thin, ſerous, watery part that remains in the bottom: draw off the thin part (called here *wigg),* by opening a ſtop-cock placed for that purpoſe cloſe above the bottom, and reſerve the cream for uſe. Not much leſs than the half the milk is thus converted into a ſort of cream, which when well made ſeems to be as rich and as fat as real cream itſelf, and is only diſtinguiſhable from that by its ſourneſs. It is eaten with ſugar, and eſteemed a great delicacy; and uſually ſells at double the price of unſkimmed milk.” 4. Beſides ſeparating the firſt from the laſt drawn milk.” it will be neceſſary alſo to take nothing but the cream firſt ſeparated from the beſt milk. The remainder of the milk may be employed either in making cheeſes, or allowed to throw up cream for butter of an inferior quality. 5. Hence it is plain, that butter of the very beſt quality, could be made only in a dairy of conſiderable extent, as only a ſmall portion of the milk of each cow could be ſet apart for it. 6. Hence it appears that butter and cheeſe can be made in a conſiſtency with one another; the beſt of the milk being ſet apart for the former, and the worſt for the latter. But as perhaps no perſon would chooſe to give ſuch a price for the very beſt butter as would indemnify the farmer for his trouble and expence, it may be ſufficient to take only the firſt drawn half of the milk for cheeſe, and uſe the remainder for butter; and the cream of this, even though allowed to ſtand till it begins to turn ſour, will always yield butter of a much ſuperior quality to that produced in the ordinary manner.

209 Dairy deſcribed.

Our author now proceeds to enumerate the properties of a dairy. The milk-houſe ought to be cool in ſummer and warm in winter; ſo that an equal temperature may be preſerved throughout the year. It ought alſo to be dry, ſo as to admit of being kept ſweet and clean at all times. A ſeparate building ſhould be erected for the purpoſe, near a cool ſpring or running water, where the cows may have eaſy acceſs to it, and where it is not liable to be incommoded by ſtagnant water. The apartment where the milk ſtands ſhould be well thatched, have thick walls, and a ventilator in the top for admitting a free circulation of air. There ſhould alſo be an apartment with a fire-place and cauldron, for the purpoſe of ſcalding and cleaning the veſſels. The Doctor is of opinion, that the temperature of from 50 to 55 degrees is the moſt proper for ſeparating the cream from the milk, and by proper means this might eaſily be kept up, or nearly ſo, both ſummer and winter.

210 Wooden utenſils preferable to every other kind.

The utenſils of the dairy ſhould be all made of wood, in preference either to lead, copper, or even caſt iron. Theſe metals are all very eaſily ſoluble in acids; the ſolutions of the two firſt highly poiſonous; and though the latter is innocent, the taſte of it might render the products highly diſagreeable. The creaming diſhes, when properly cleaned, ſweet, and cool, ought to be filled with the milk as ſoon as it is drawn from the cow, having been firſt carefully ſtrained through a cloth, or cloſe ſtrainer made of hair or wire: the Doctor prefers ſilver wire to every other. The creaming diſhes ought never to exceed three inches in depth; but they may be ſo broad as to contain a gallon or a gallon and an half; when filled they ought to be put on the ſhelves of the milk-houſe, and remain there until the cream be fully ſeparated. If the fineſt butter be intended, the milk ought not to ſtand above ſix or eight hours, but for ordinary butter it may ſtand twelve hours or more; yet if the dairy be very large, a ſufficient quantity of cream will be ſeparated in two, three, or four hours, for making the beſt butter. It is then to be taken off as nicely as poſſible by a ſkimming-diſh, without lifting any of the milk; and immediately after put into a veſſel by itſelf, until a proper quantity for churning be collected. A firm, neat, wooden barrel ſeems well adapted for this purpoſe, open at one end, and having a lid fitted to cloſe it. A cock or ſpigot ought to be fixed near the bottom, to draw off any thin or ſerous part which may drain from the cream; the inſide of the opening ſhould be covered with a bit of fine ſilver wire gauze, in order to keep back the cream while the ſerum is allowed to paſs: and the barrel ſhould be inclined a little on its ſtand, to allow the whole to run off.

211 Cream ought to be kept ſome time before it be made into butter.

The Doctor contradicts the opinion that very fine butter cannot be obtained, except from cream that is not above a day old. On the contrary, he inſiſts that it is only in very few caſes that even tolerably good butter can be obtained from cream that is not above one day old. The ſeparation of butter from cream only takes place after the cream has attained a certain degree of acidity. If it be agitated before that acidity has begun to take place, no butter can be obtained, and the agitation muſt be continued till the time that the ſourneſs is produced; after which the butter begins to form. “In ſummer, while the climature is warm, the heating may be, without very much difficulty, continued until the acidity be produced, ſo that butter may be got: but in this caſe the proceſs is long and tedious; and the butter is for the moſt part of a ſoft conſiſtence, and tough and gluey to the touch. If this proceſs be attempted during the cold weather in winter, butter can ſcarcely be in any way obtained, unleſs by the application of ſome great degree of heat, which ſometimes aſſiſts in producing a very inferior kind of butter, white, hard and brittle, and almoſt unfit for any culinary purpoſe whatever. The judicious farmer, therefore, will not attempt to imitate this practice, but will allow his cream to remain in the veſſel appropriated for keeping it, until it has acquired the proper degree of acidity. There is no rule for determining how long it is to be kept; but our author is of opinion that a very great latitude is allowable in this caſe; and that if no ſerous matter be allowed to lodge among the cream, it may be kept good for making butter a great many weeks.

212 **Of the churn.**

The churn in which butter is made likewiſe admits of conſiderable diverſity; but our author prefers the old-faſhioned upright churn to all others, on account of its being more eaſily cleaned. The labour, when the cream is properly prepared, he thinks very trifling. Much greater nicety, he ſays, is required in the proceſs of churning than moſt people are aware of; as a few haſty and irregular ſtrokes will render butter bad, which otherwiſe would have been of the fineſt quality. After the proceſs is over, the whole ought to be ſeparated from the milk, and put into a clean diſh; the inſide of which, if made of wood, ought to be well rubbed with common ſalt, to prevent the butter from adhering to it. The butter ſhould be preſſed and worked with a flat wooden ladle or ſkimming diſh, having a ſhort handle, ſo as to force out all the milk that was lodged in the cavities of the maſs. This operation requires a conſiderable degree of ſtrength as well as dexterity; but our author condemns the beating up of the butter with the hand as "an indelicate and barbarous practice."

213 **Butter ought not to be put into water.**

In like manner he condemns the employing of cold water in this operation, to *waſh* the butter as it is called. Thus, he ſays, the quality of it is debaſed in an aſtoniſhing degree. If it is too ſoft, it may be put into ſmall veſſels, and theſe allowed to ſwim in a tub of cold water; but the water ought never to touch the butter. The beating ſhould be continued till the milk be thoroughly ſeparated, but not till the butter become tough and gluey; and after this is completely done, it is next to be ſalted. The veſſel into which it is to be put muſt be well ſeaſoned with boiling water ſeveral times poured into it; the inſide is to be rubbed over with common ſalt, and a little melted butter poured into the cavity between the bottom and ſides, ſo as to make it even with the bottom; and it is then fit for receiving the butter.

214 **Compoſition for preſerving butter.**

Inſtead of common ſalt alone, the Doctor recommends the following compoſition. "Take of ſugar one part, of nitre one part, and of the beſt Spaniſh great ſalt two parts. Beat the whole into a fine powder, mix them well together, and put them by for uſe. One ounce of this to be thoroughly mixed with a pound of butter as ſoon as it is freed from the milk, and then immediately put into the veſſel deſigned to hold it; after which it muſt be preſſed ſo cloſe as to leave no air holes; the ſurface is to be ſmoothed and covered with a piece of linen, and over that a piece of wet parchment; or in defect of this laſt, fine linen that has been dipped in melted butter, exactly fitted to the edges of the veſſel all round, in order to exclude the air as much as poſſible. When quite full, the caſk is to be covered in like manner, and a little melted butter put round the edges, in order to fill up effectually every cranny, and totally to exclude the air. "If all this (ſays the Doctor) be carefully done, the butter may be kept perfectly ſound in this climate for many years. How many years I cannot tell; but I have ſeen it two years old, and in every reſpect as ſweet and ſound as when only a month old. It deſerves to be remarked, that butter cured in this manner does not taſte well till it has ſtood at leaſt a fortnight after being ſalted; but after that period is elapſed, it eats with a rich marrowy taſte that no other butter ever acquires; and it taſtes ſo little of ſalt, that a perſon who had been accuſtomed to eat butter cured with common ſalt only, would not imagine it had got one-fourth part of the ſalt neceſſary to preſerve it." Our author is of opinion, that ſtrong brine may be uſeful to pour upon the ſurface during the time it is uſing, in order the more effectually to preſerve it from the air, and to avoid rancidity.

215 **To prepare butter for ſending to warm climates.**

As butter contains a quantity of mucilaginous matter much more putreſcible than the pure oily part, our author recommends the purifying it from this mucilage, by melting in a conical veſſel, in which the mucilage will fall to the bottom; the pure oily part ſwimming at top. This will be uſeful when butter is to be ſent a long voyage to warm climates, as the pure part will keep much better than when mixed with the other.

216 **Preſerved by honey.**

He propoſes another method of preſerving butter, *viz.* by mixing it with honey, which is very antiſeptic, and mixes intimately with the butter. Thus mixed, it eats very pleaſantly, and may perhaps be ſucceſsfully uſed with a medicinal intention.

217 **Making of cheeſe.**

The other grand object of the dairy is cheeſe-making, which in ſome counties of England becomes a very conſiderable article. In this the ſame precaution is to be obſerved as with regard to butter; *viz.* the milk ought not to be agitated by carrying to any diſtance nor ought the cows to be violently driven before they are milked, which reduces the milk almoſt to the ſame ſtate as if agitated in a barrel or churn. To this cauſe Mr Twamley, who has written a treatiſe upon dairy management, attributes the great difficulty ſometimes met with in making the milk coagulate; four or five hours being ſometimes neceſſary inſtead of one (the uſual time employed); and even after all, the curd will be of ſuch a ſoft nature, that the cheeſe will ſwell, puff up, and rent in innumerable places without ever coming to that ſolid conſiſtence which it ought to have. As this frequently happens in conſequence of heat, Mr Twamley, adviſes to mix a little cold ſpring-water with the milk. It is a bad practice to put in more runnet when the curd appears difficult to be formed; for this, after having once formed the curd by the uſe of a certain quantity, will diſſolve it again by the addition of more.

218 **General defects of cheeſe.**

The moſt common defects of cheeſe are its appearing when cut full of ſmall holes called *eyes*; its puffing up, cracking, and pouring out quantities of thin ſerous liquor; becoming afterwards rotten and full of maggots in thoſe places from which the liquor iſſued. All this, according to our author, proceeds from the formation of a ſubſtance called by him *ſlip curd*, a kind of half coagulum, incapable of a thorough union with the true curd, and which when broken into very ſmall bits produces *eyes*; but if in larger pieces, occaſions thoſe rents and cracks in the cheeſe already mentioned: for though this kind of curd retains its coagulated nature for ſome time, it always ſooner or later diſſolves into a ſerous liquid. This kind of curd may be produced 1. by uſing the milk too hot. 2. By bad runnet. 3. By not allowing the curd a proper time to form. The firſt of theſe is remedied by the uſe of cold water, which our author ſays is ſo far from being detrimental to the quality of the cheeſe, that it really promotes the action of the runnet upon the milk. The ſecond *viz*, a knowledge of good from bad runnet, can only be acquired by long practice, and no particular directions can be given, farther than that the utmoſt care 219 Of preparing runnet. muſt be taken, that it have no putrid tendency, nor any rancidity from too great heat in drying. The only rule that can be given, for its preparation is to take out the maw of a calf which has fed entirely upon milk; after it is cold, ſwill it a little in water; rub it well with ſalt; then fill it with the ſame and afterwards cover it. Some cut them open and ſpread them in ſalt, putting them in layers above one another, letting them continue in the brine they produce, ſometimes ſtirring or turning them for four, ſix, or nine months; after which they are opened to dry, ſtretched out upon ſticks or ſplints. They may be uſed immediately after being dried, though it is reckoned beſt to keep them till they be a year old before they are uſed. The beſt method of making the runnet from the ſkins, according to our author, is the following; "Take pure ſpring-water, in quantity proportioned to the runnet you intend to make: it is thought beſt by ſome two ſkins to a gallon of water; boil the water, which makes it ſofter or more pure; make it with ſalt into brine that will ſwim an egg; then let it ſtand till the heat is gone off to about the heat of blood-warm; then put your maw-ſkin in, either cut in pieces or whole; the former I ſhould imagine beſt or moſt convenient; letting it ſteep 24 hours, after which it will be fit for uſe. Such quantity as is 220 Mr Hazard's receit for runnet. judged neceſſary muſt then be put into the milk; about a tea cupful being neceſſary for ten cows milk; though in this reſpect very particular directions cannot be given."

In the Bath Papers, Mr Hazard gives the following receipt for making runnet. "When the maw ſkin is well prepared and fit for the purpoſe, three pints or two quarts of ſoft water, clean and ſweet, ſhould be mixed with ſalt, wherein ſhould be put ſweet brier, roſe-leaves and flowers, cinamon mace, cloves, mace, and in ſhort almoſt every ſort of ſpice and aromatic that can be procured; and if theſe are put into two quarts of water, they muſt boil gently till the liquor is reduced to three pints, and care ſhould be taken that this liquid is not ſmoked; it ſhould be ſtrained clear from the ſpices, &c. and when found not to be warmer than milk from the cow, it ſhould be poured upon the vell or maw; a lemon may then be ſliced into it, when it may remain a day or two; after which it ſhould be ſtrained again and put into a bottle, where it well corked it will keep good for twelve months or more; it will ſmell like a perfume, and a ſmall quantity of it will turn the milk and give the cheeſe a pleaſing flavour." He adds that if the vell or maw be ſalted and dried for a week or two near the fire, it will do for the purpoſe again almoſt as well as before.

221 Particulars to be obſerved in making of cheeſe.

In the making of cheeſe, ſuppoſing the runnet to be of a good quality, the following particulars muſt be obſerved; 1. The proper degree of heat. This ought to be what is called *milk-warm*, or "a few degrees removed from coolneſs," according to Mr Twamley; conſiderably below the heat of milk taken from the cow. If too hot, it may be reduced to a proper temperature by cold water, as already mentioned. 2. The time allowed for the runnet to take effect. This our author obſerves, ought never to be leſs than an hour and a half. The proceſs may be accelerated, particularly by putting ſalt to the milk before the runnet is added. Mr Twamley adviſes two handfuls to ten or twelve cows milk; but he aſſures us, that no bad conſequence can follow from the curd being formed ever ſo ſoon; as it then only becomes more ſolid and fit for making cheeſe of a proper quality. 3. To prevent any difficulty in ſeparating the curd from the whey, prepare a long cheeſe knife from lath; one edge being ſharpened to cut the curd acroſs from top to bottom in the tub, croſſing it with lines checkerwiſe; by which means the whey riſes through the vacancies made by the knife, and the curd ſinks with much more eaſe. A ſieve has alſo been uſed with ſucceſs, in order to ſeparate the whey perfectly from the curd. 4. Having got the curd all firm at the bottom of the tub, take the whey from it; let it ſtand a quarter of an hour to drain before you put it into the vat to break it. If any bits of ſlip-curd ſwim among the whey, pour it all off together rather than put it among the cheeſe, for the reaſons already given. Some dairy-women allow the curd to ſtand for two hours; by which time it is become of ſo firm a nature, that no breaking is neceſſary; they have only to cut it in ſlices, put it into the vat and work it well by ſqueezing thoroughly to make it ſit cloſe; then put it into the preſs. Our author, however, approves more of the method of breaking the curd, as leſs apt to make the cheeſe hard and horny. 5. When the whey is of a white colour, it is a certain ſign that the curd has not ſubſided; but if the method juſt now laid down be followed, the whey will always be of a green colour; indeed this colour of the whey is always a certain criterion of the curd having been properly managed. 6. The beſt method of preventing cheeſe from heaving, is to avoid making the runnet too ſtrong, to take care that it be clean, and not tainted; to be certain that the curd is fully come, and not to ſtir it before the air has had time to eſcape; a quantity of air being always diſcharged in this as in many other chemical proceſſes. 7. Cheeſe is very apt to ſplit in conſequence of being "ſalted within," eſpecially when the vat is about half filled. In this caſe the curd though ſeparated only in a ſmall degree by the ſalt, never cloſes or joins as it ought to do. Mr Twamley prefers ſalting in the milk greatly to this method. 8. Dry cracks in cheeſe are generally produced by keeping curd from one meal to another, and letting the firſt become too ſtiff and hard before it is mixed with the other. 9. Curdly or wrinkle-coated cheeſe is cauſed by ſour milk. Cheeſe made of cold milk is apt to be hard, or to break and fly before the knife. 10. Such coated cheeſe is cauſed by being made too cold, as cheeſe that is made in winter or late in autumn is apt to be, unleſs laid in a warm room after it is made.

Cheeſe is of very different quality, according to the milk from which it is made; Thus, in Glouceſterſhire, what is called the *ſecond* or *two-meal* cheeſe, is made from one meal of new milk and one of ſkimmed or old milk, having the cream taken away. Skimmed cheeſe or *flet milk* cheeſe, is made entirely from ſkimmed milk the cream having been taken off to make butter. It goes by the name of *Suffolk cheeſe*, and is much uſed at ſea; being leſs liable to be affected by the heat of warm climates than the other kinds. A great deal of difference, however, is to be obſerved in the quality of it, which our author ſuppoſes to ariſe chiefly from greater care being taken in ſome places than in others.

Slip coat or ſoft cheeſe is made entirely of ſlip-curd, and diſſolves into a kind of creamy liquor which is a demonſtration of the nature of this curd as already mentioned. It is commonly computed, that as much milk is required to make one pound of butter as two of cheeſe: and even more where the land is poor, and the paſtures afford but little cream.—For further particulars with regard to theſe two commodities, ſee the articles BUTTER and CHEESE.

SECT X. *Making of Fruit-Liquors.*

THESE, as objects of Britiſh huſbandry, are principally two, *Cyder* and *Perry*; the manufacturing of which forms a capital branch in the fruit counties. and of which the improvement muſt be conſidered as of great importance to the public, but particularly ſo to the inhabitants of thoſe diſtricts where theſe liquors conſtitute their common beverage.

223 Excellence of cyder and perry.

Cyder and perry, when genuine and in high perfection, are excellent vinous liquors, and are certainly far more wholeſome than many others which at preſent are in much higher eſtimation. When the muſt is prepared from the choiceſt fruit, and undergoes the exact degree of vinous fermentation requiſite to its perfection, the acid and the ſweet are ſo admirably blended with the aqueous, oily, and ſpiritous principles, and the whole ſo imbued with the grateful flavour of the rinds, and the agreeable aromatic bitter of the kernels, that it aſſumes a new character; grows lively, ſparkling, and exhilarating; and when completely mellowed by time, the liquor becomes at once highly delicious to the palate, and congenial to the conſtitution; ſuperior in every reſpect to moſt other Engliſh wines, and perhaps not inferior to many of the beſt foreign wines. Such (ſays Dr Fothergill †) would it be pronounced by all competent judges, were it not for the popular prejudice annexed to it as a cheap home-brewed liquor, and conſequently within the reach of the vulgar. To compare ſuch a liquor with the foreign fiery ſophiſticated mixtures often imported under the name of wines, would be to degrade it; for it certainly ſurpaſſes them in flavour and pleaſantneſs, as much as it excels them in wholeſomeneſs and cheapneſs. But rarely do we meet with perry or cyder of this ſuperior quality. For what is generally ſold by dealers and inn-keepers is a poor, meagre, vapid liquor, prone to the acetous fermentation, and of courſe very injurious to the conſtitution. Is it not very mortifying, after the experience of ſo many centuries, that the art of preparing thoſe ancient Britiſh liquors ſhould ſtill be ſo imperfectly underſtood as yet to ſeem to be in its very infancy?—That throughout the principal cyder diſtricts, the practice ſhould ſtill reſt on the moſt vague indeterminate principles, and that the excellence of the liquor ſhould depend rather on a lucky random hit, than on good management! Yet ſuch appears to be really the caſe even among the moſt experienced cyder-makers of Herefordſhire and Glouceſterſhire.

224 Art of making them not yet perfectly underſtood.

Mr Marſhall, that nice obſerver of rural affairs, in his late tour* through thoſe counties (expreſsly undertaken for the purpoſe of inquiry on this ſubject), informs us, that ſcarcely two of theſe profeſſional artiſts are agreed as to the management of ſome of the more eſſential parts of the proceſs. That palpable errors are committed as to the time and manner of gathering the fruit—in laying it up—in neglecting to ſeparate the unſound—and to grind properly the rinds and kernels, &c. That the method of conducting the vinous fermentation, the moſt critical part of the operation, and which ſtamps the future value of the liquor, is by no means aſcertained: While ſome promote the fermentation in a ſpacious open vat, others repreſs it by incloſing the liquor in a hogſhead, or ſtrive to prevent it altogether. That no determinate point of temperature is regarded, and that the uſe of the thermometer is unknown or neglected. That they are as little conſiſtent as to the time of racking off; and whether this ought to be done only once, or five or ſix times repeated. That for fining down the liquor, many have recourſe to that odious article, bullock's blood, when the intention might be much better anſwered by whites of eggs or iſinglaſs. And, finally, that the capricious taſte of particular cuſtomers is generally conſulted rather than the real excellence of the liquor; and conſequently that a very imperfect liquor is often vended, which tends to reduce the price, to diſgrace the vender, and to bring the uſe of cyder and perry into diſrepute.

225 Errors pointed out.

The art of making vinous liquors is a curious chemical proceſs; and its ſucceſs chiefly depends on a dexterous management of the vinous fermentation, beſides a cloſe attention to ſundry minute circumſtances, the theory of which is perhaps not yet fully underſtood by the ableſt chemiſts. Can we longer wonder then that ſo many errors ſhould be committed by illiterate cyder-makers, totally unverſed in the firſt principles of the chemical art? Some few, indeed, more enlightened than their brethren, and leſs bigotted to their own opinions, by dint of obſervation ſtrike out improvements, and produce every now and then a liquor of ſuperior quality, though perhaps far ſhort of excellence, yet ſtill ſufficient to ſhow what might poſſibly be accompliſhed by a ſeries of new experiments conducted on philoſophical principles. This might lead

† *Bath Papers*, vol. v. p. 343.

* *Rural Econ. of Glouceſterſhire*, ii. p. 308.

226 Means of improvement.

to ſucceſſive improvements, till at length our Engliſh fruit-liquors might be carried to a pitch of perfection hitherto unknown, by which the demand, both at home and abroad, would ſoon be enlarged, the prices augmented according to the quality, the value of eſtates increaſed, and the health and proſperity of theſe counties proportionably advanced. This might alſo help to point out a method of correcting the imperfections of theſe liquors; and of meliorating thoſe of a weak meagre quality, by ſafer and more effectual means than are now practiſed; and though nothing can fully compenſate the defect of ſunſhine in maturing the ſaccharine juices in unfavourable ſeaſons, yet probably ſuch liquor might, without the dangerous and expenſive method of boiling in a copper veſſel, admit of conſiderable improvement by the addition of barm or other ſuitable ferment, as yet unknown in the practice of the the cyder diſtricts; or perhaps rather by a portion of rich muſt, or ſome wholeſome ſweet, as honey, ſugar-candy, or even molaſſes, added in due proportion, previous to the fermentation. In fact, it appears from a late publication †, that the Germans are known to meliorate their thin harſh wines by an addition of concentrated muſt, not by evaporation, but by freezing. By this ſimple proceſs they are made to emulate good French wines; a practice worthy of imitation, eſpecially in the northern climates.

227 Deſcription of a cyder mill and mill-houſe.

Cyder, as is well known, is made from apples, and *Perry* from pears only. The general method of preparing both theſe liquors is very much the ſame; and under the article CYDER a deſcription is given of the way in which thoſe fruits are gathered, ground, and preſſed. The mill is not eſſentially different from that of a common tanner's mill for grinding bark. It conſiſts of a millſtone from two and an half to four feet and an half in diameter, running on its edge in a circular ſtone trough, from nine to twelve inches in thickneſs, and from one to two tuns in weight. The bottom of the trough in which this ſtone runs is ſomewhat wider than the thickneſs of the ſtone itſelf; the inner ſide of the groove riſes perpendicularly, but the outer ſpreads in ſuch a manner as to make the top of the trough ſix or eight inches wider than the bottom; by which means there is room for the ſtone to run freely, and likewiſe for putting in the fruit, and ſtirring it up while grinding. The bed of a middle-ſized mill is about 9 feet, ſome 10, and ſome 12; the whole being compoſed of two, three, or four ſtones cramped together, and finiſhed after being cramped in this manner. The beſt ſtones are found in the foreſt of Dean; generally a dark, reddiſh gritſtone, not calcareous; for if it were of a calcareous quality, the acid juice of the fruits would act upon it and ſpoil the liquor: a clean-grained grindſtone grit is the fitteſt for the purpoſe. The runner is moved by means of an axle paſſing through the centre, with a long arm reaching without the bed of the mill, for a horſe to draw by; on the other ſide is a ſhorter arm paſſing through the centre of the ſtone, as repreſented in the figure. An iron bolt, with a large head, paſſes through an eye, in the lower part of the ſwivel on which the ſtone turns, into the end of the inner arm of the axis; and thus the double motion of it is obtained, and the ſtone kept perfectly upright. There ought alſo to be fixed on the inner arm of the axis, about a foot from the runner, a cogged wheel working in a circle of cogs, fixed upon the bed of the mill. The uſe of theſe is to prevent the runner from ſliding, which it is apt to do when the mill is full; it likewiſe makes the work more eaſy for the horſe. Theſe wheels ought to be made with great exactneſs. Mr Marſhall obſerves, that it is an error to make the horſe draw by traces: "The acting point of draught (ſays he), the horſe's ſhoulder, ought, for various reaſons, to be applied immediately at the end of the arm of the axis; not two or three yards before it; perhaps of a ſmall mill, near one fourth of its circumference." The building in which the mill is incloſed ought to be of ſuch a ſize, that the horſe may have a path of three feet wide betwixt the mill and the walls, ſo that a middling-ſized mill, with its horſe-path, takes up a ſpace of 14 or 15 feet every way. The whole dimenſions of the mill-houſe, according to our author, to render it any way convenient, are 24 feet by 20: it ought to have a floor thrown over it at the height of ſeven feet; with a door in the middle of the front, and a window oppoſite, with the mill on one ſide and the preſs on the other ſide of the window. The latter muſt be as near the mill as convenience will allow, for the more eaſy conveying the ground fruit from the one to the other. The preſs, of which the principle will be underſtood from the figure, has its bed or bottom about five feet ſquare. This ought to be made entirely either of wood or ſtone; the practice of covering it with lead being now univerſally known to be pernicious. It has a channel cut a few inches within its outer edges, to catch the liquor as it is expreſſed, and convey it to a lip formed by a projection on that ſide of the bed oppoſite to the mill; having under it a ſtone trough or wooden veſſel, ſunk within the ground, when the bed is fixed low, to receive it. The preſs is worked with levers of different lengths; firſt a ſhort, and then a moderately long one, both worked by hand; and laſtly, a bar eight or nine feet long worked by a capſtane or windlaſs. The expence of fitting up a mill-houſe is not very great. Mr Marſhall computes it from 20l. to 25l. and, on a ſmall ſcale, from 10l. to 15l. though much depends on the diſtance and carriage of the ſtone: when once fitted up, it will laſt many years.

The making of the fruit-liquors under conſideration requires an attention to the following particulars. I. The fruit. II. The grinding. III. Preſſing. IV. Fermenting. V. Correcting. VI. Laying up. VII. Bottling; each of which heads is ſubdivided into ſeveral others.

228 Management of the fruit.

I. In the *management of the fruit*, the following particulars are to be conſidered.

1. The time of gathering; which varies according to the nature of the fruit. The early pears are fit for the mill in September; but few apples are ready for gathering before Michaelmas; though, by reaſon of accidental circumſtances, they are frequently manufactured before that time. For ſale cyder, and keeping drink, they are ſuffered to hang upon the trees till fully ripe; and the middle of Octobe-

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† *Hepſon's Chemiſtry.*

ber is generally looked upon to be a proper time for gathering the ſtire apple. The criterion of a due degree of ripeneſs is the fruit falling from the tree: and to force it away before that time, in Mr Marſhall's opinion, is robbing it of ſome of its moſt valuable particles. "The harveſting of fruit (ſays he) is widely different in this reſpect from the harveſting of grain; which has the entire plant to feed it after its ſeparation from the ſoil; while fruit, after it is ſevered from the tree, is cut off from all poſſibility of a further ſupply of nouriſhment; and although it may have reached its wonted ſize, ſome of its more eſſential particles are undoubtedly left behind in the tree." Sometimes, however, the fruits which are late in ripening are apt to hang on the tree until ſpoiled by froſts; though weak watery fruits ſeem to be moſt injured in this manner; and Mr Marſhall relates an inſtance of very fine liquor being made from golden pippens, after the fruit had been frozen as hard as ice.

229 Method of gathering it. 2. The method of gathering. This, as generally practiſed, is directly contrary to the principle laid down by Mr Marſhall, *viz.* beating them down with long ſlender poles. An evident diſadvantage of this method is, that the fruit is of unequal ripeneſs; for the apples on the ſame trees will differ many days, perhaps even weeks, in their time of coming to perfection; whence ſome part of the richneſs and flavour of the fruit will be effectually and irremediably cut off. Nor is this the only evil to be dreaded; for as every thing depends on the fermentation it has to undergo, if this be interrupted, or rendered complex by a mixture of ripe and unripe fruits, and the liquor be not in the firſt inſtance ſufficiently purged from its feculencies, it is difficult to clear the liquor afterwards. The former defect the cyder makers attempt to remedy by a mixture of brown ſugar and brandy, and the latter by bullock's blood and brimſtone; but neither of theſe can be expected to anſwer the purpoſe very effectually. The beſt method of avoiding the inconveniences ariſing from an unequal ripening of the fruit is to go over the trees twice, once with a hook, when the fruit begins to fall ſpontaneouſly; the ſecond time, when the latter are ſufficiently ripened, or when the winter is likely to ſet in, when the trees are to be cleared with the poles abovementioned.

230 Maturing it, &c. 3. Maturing the gathered fruit. This is uſually done by making it into heaps, as is mentioned under the article Cyder: but Mr Marſhall entirely diſapproves of the practice; becauſe, when the whole are laid in a heap together, the ripeſt fruit will begin to rot before the other has arrived at that degree of artificial ripeneſs which it is capable of acquiring. "The due degree of maturation of fruit for liquor (he obſerves) is a ſubject about which men, even in this diſtrict, differ much in their ideas. The prevailing practice of gathering into heaps until the ripeſt begin to rot, is waſting the beſt of the fruit, and is by no means an accurate criterion. Some ſhake the fruit, and judge by the rattling of the kernels; others cut through the middle, and judge by their blackneſs; but none of theſe appear to be a proper teſt. It is not the ſtate of the kernels but of the fleſh; not of a few individuals, but of the greater part of the prime-fruit, which renders the collective body fit or unfit to be ſent to the mill. The moſt rational teſt of the ripeneſs of the fruit, is that of the fleſh having acquired ſuch a degree of mellowneſs, and its texture ſuch a degree of tenderneſs, as to yield to moderate preſſure. Thus, when the knuckle or the end of the thumb can with moderate exertion be forced into the pulp of the fruit, it is deemed in a fit ſtate for grinding."

4. Preparation for the mill. The proper management of the fruit is to keep the ripe and unripe fruits ſeparate from each other: but this cannot be done without a conſiderable degree of labour; for as by numberleſs accidents the ripe and unripe fruits are frequently confounded together, there cannot be any effectual method of ſeparating them except by hand; and Mr Marſhall is of opinion, that this is one of the grand ſecrets of cyder-making, peculiar to thoſe who excel in the buſineſs; and he is ſurpriſed that it ſhould not before this time have come into common practice.

5. Mixing fruits for liquor. Our author ſeems to doubt the propriety of this practice; and informs us, that the finer liquors are made from ſelect fruits; and he hints that it might be more proper to mix liquors after they are made, than to put together the crude fruits.

231 Grinding. II. *Grinding,* and management of the fruit when ground.

1. For the greater convenience of putting the fruit into the mill, every mill-houſe ſhould have a fruit chamber over it, with a trap-door to lower the fruit down into the mill. The beſt manner in which this can be accompliſhed, is to have the valve over the bed of the mill, and furniſhed with a cloth ſpout or tunnel reaching down to the trough in which the ſtone moves. No ſtraw is uſed in the lofts, but ſometimes the fruit is turned. In Herefordſhire, it is generally believed, that grinding the rind and ſeeds of the fruit as well as the fleſhy part to a pulp, is neceſſary towards the perfection of the cyder; whence it is neceſſary, that every kind of pains ſhould be taken to perform the grinding in the moſt perfect manner. Mr Marſhall complains, that the cyder-mills are ſo imperfectly finiſhed by the workmen, that for the firſt *fifty years* they cannot perform their work in a proper manner. Inſtead of being nicely fitted to one another with the ſquare and chiſſel, they are hewn over with a rough tool in ſuch a careleſs manner, that horſe beans might lie in ſafety in their cavities. Some even imagine this to be an advantage, as if the fruit was more effectually and completely broken by rough than ſmooth ſtones. Some uſe fluted rollers of iron; but theſe will be corroded by the juice, and thus the liquor might be tinged. Smooth rollers will not lay hold of the fruit ſufficiently to force it through.

Another improvement requiſite in the cyder-mills is to prevent the matter in the trough from riſing before the ſtone in the laſt ſtage of grinding, and a method of ſtirring it up in the trough more effectually than can be done at preſent. To remedy the former of theſe defects, it might perhaps be proper to grind the fruit firſt in the mill to a certain degree; and then put it between two ſmooth rollers to finiſh the operation in the moſt perfect manner. It is an error to grind too much at once; as this clogs up the mill, and prevents it from going eaſily. The uſual quantity for a middle-ſized mill is a bag containing four corn buſhels; but our author had once an opportunity of ſeeing a mill in which only half a bag was put; and thus the work ſeemed to go on more eaſily as well as more quickly than when more was put in at once. The quantity put in at one time is to be taken out when ground. The uſual quantity of fruit ground in a day is as much as will make three hogſheads of perry or two of cyder.

2. Management of the ground-fruit. Here Mr Marſhall condemns in very ſtrong terms the practice of preſſing the pulp of the fruit as ſoon as the grinding is finiſhed; becauſe thus neither the rind nor ſeeds have time to communicate their virtues to the liquor. In order to extract theſe virtues in the moſt proper manner, ſome allow the ground-fruit to lie 24 hours or more after grinding, and even regrind it, in order to have in the moſt perfect manner the flavour and virtues of the ſeeds and rind.

232 Preſſing, &c.

III. *Preſſing the fruit*, and management of the *reſiduum*. This is done by folding up the ground-fruit in pieces of hair-cloth, and piling them up above one another in a ſquare frame or mould, and then pulling down the preſs upon them, which ſqueezes out the juice, and forms the matter into thin and almoſt dry cakes. The firſt runnings come off foul and muddy; but the laſt, eſpecially in perry, will be as clear and fine as if filtered thro' paper. It is common to throw away the reſiduum as uſeleſs; ſometimes it is made uſe of when dry as fuel; ſometimes the pigs will eat it, eſpecially when not thoroughly ſqueezed; and ſometimes it is ground a ſecond time with water, and ſqueezed for an inferior kind of liquor uſed for the family.—Mr Marſhall adviſes to continue the preſſure as long as a drop can be drawn. “It is found (ſays he), that even by breaking the cakes of refuſe with the hands only gives the preſs freſh power over it; for though it has been preſſed to the laſt drop, a gallon or more of additional liquor may be got by this means. Regrinding them has a ſtill greater effect: In this ſtate of the materials the mill gains a degree of power over the more rigid parts of the fruit, which in the firſt grinding it could not reach. If the face of the runner and the bottom of the trough were dreſſed with a broad chiſſel, and made true to each other, and a moderate quantity of reſiduum ground at once, ſcarcely a kernel could eſcape unbroken, or a drop of liquor remain undrawn.

But though the whole virtue of the fruit cannot be extracted without grinding it very fine, ſome inconvenience attends this practice, as part of the pulp thus gets through the hair cloth, and may perhaps be injurious to the ſubſequent fermentation. This, however, may be in a great meaſure remedied by ſtraining the firſt runnings through a ſieve. The whole ſhould alſo be allowed to ſettle in a caſk, and drawn off into a freſh veſſel previous to the commencement of the fermentation. The reduced fruit ought to remain ſome time between the grinding and preſſing, that the liquor may have an opportunity of forming an extract with the rind and kernels: but this muſt not be puſhed too far, as in that caſe the colour of the cyder would be hurt; and the moſt judicious managers object to the pulp remaining longer than 12 hours without preſſure. “Hence (ſays our author), upon the whole, the moſt eligible management in this ſtage of the art appears to be this: Grind one preſsful a-day; preſs and regrind the reſiduum in the evening; infuſe the reduced matter all night among part of the firſt runnings; and in the morning re-preſs while the next preſsful is grinding.

233 Fermentation.

IV. *Fermentation.* The common practice is to have the liquor turned; that is, put into caſks or hogſheads immediately from the preſs, and to fill them quite full: but it is undoubtedly more proper to leave ſome ſpace empty to be filled up afterwards. No accurate experiment has been made with regard to the temperature of the air proper to be kept up in the place where the fermentation goes on. Froſt is prejudicial: but when the proceſs uſually commences, that is about the middle of October, the liquor is put into airy ſhades, where the warmth is ſcarce greater than in the open atmoſphere; nay, they are frequently expoſed to the open air without any covering farther than a piece of tile or flat ſtone over the bung-hole, propped up by a wooden pin on one ſide to cauſe the rain water run off. In a complete manufactory of fruit liquor, the fermenting room ſhould be under the ſame roof with the mill-houſe; a continuation of the preſs room, or at leaſt opening into it, with windows or doors on every ſide, to give a free admiſſion of air into it; ſufficient defences againſt froſt; fruit-lofts over it, and vault underneath for laying up the liquors after fermentation; with ſmall holes in the crown of the arch to admit a leathern pipe, for the purpoſe of conveying the liquors occaſionally from the one to the other.

In making of fruit-liquors, no ferment is uſed as in making of beer; though, from Mr Marſhall's account of the matter, it ſeems far from being unneceſſary. Owing to this omiſſion, the time of the commencement of the fermentation is entirely uncertain. It takes place ſometimes in one, two, or three days; ſometimes not till a week or month after turning: but it has been obſerved, that liquor which has been agitated in a carriage, though taken immediately from the preſs, will ſometimes paſs almoſt immediately into a ſtate of fermentation. The continuance of the fermentation is no leſs uncertain than the commencement of it. Liquors, when much agitated, will go through it perhaps in one day; but when allowed to remain at reſt, the fermentation commonly goes on two or three days, and ſometimes five or ſix. The fermenting liquor, however, puts on a different appearance according to circumſtances. When produced from fruits properly matured, it generally throws up a thick ſcum reſembling that of malt liquor, and of a thickneſs proportioned to the ſpecies and ripeneſs of the fruit; the riper the fruit, the more ſcum being thrown up. Perry gives but little ſcum, and cyder will ſometimes alſo do the ſame; ſometimes it is intentionally prevented from doing it.

After having remained ſome time in the fermenting veſſel, the liquor is racked or drawn off from the lees and put into freſh caſks. In this part of the operation alſo Mr Marſhall complains greatly of the little attention that is paid to the liquor. The ordinary time for racking perry is before it has done hiſſing, or ſometimes when it begins to emit fixed air in plenty. The only intention of the operation is to free the liquor from its fæces by a cock placed at a little diſtance from the bottom; after which the remainder is to be filtered through a canvas or flannel bag. This filtered liquor differs from the reſt in having an higher colour; having no longer any tendency to ferment, but on the contrary checking the fermentation of that which is racked off; and if it loſes its brightneſs, it is no longer eaſily recovered.—A freſh fermentation uſually commences after racking; and if it become violent, a freſh racking is neceſſary in order to check it; in conſequence of which the ſame liquor will perhaps be racked five or ſix times: but if only a ſmall degree of fermentation takes place, which is called *fretting*, it is allowed to remain in the ſame caſk; though even here the degree of fermentation which requires racking is by no means determined. Mr Marſhall informs us that the beſt manufacturers, however, repeat the rackings until the liquor will lie quiet, or nearly ſo; and if it be found impracticable to accompliſh this by the ordinary method of fermentation, recourſe muſt be had to fumigation with ſulphur, which is called *ſtumming* the caſks. For this fumigation, it is neceſſary to have matches made of thick linen-cloth about ten inches long, and an inch broad, thickly coated with brimſtone for about eight inches of their length. The caſk is then properly ſeaſoned, and every vent except the bung hole tightly ſtopped; a match kindled; lowered down into the caſk, and held by the end undipped until it be well lighted and the bung be driven in; thus ſuſpending the lighted match within the caſk. Having burnt as long as the contained air will ſupply the fire, the match dies, the bung is raiſed, the remnant of the match drawn out, and the caſk ſuffered to remain before the liquor be put into it for two or three hours, more or leſs according to the degree of power the ſulphur ought to have. The liquor retains a ſmell of the ſulphureous acid; but this goes off in a ſhort time, and no bad effect is ever obſerved to follow.

In ſome places the liquor is left to ferment in open caſks, where it ſtands till the firſt fermentation be pretty well over; after which the froth or yeaſt collected upon the ſurface is taken off, it being ſuppoſed that it is this yeaſt mixing with the clear liquor which cauſes it to fret after racking. The fermentation being totally ceaſed, and the lees ſubſided, the liquor is racked off into a freſh caſk, and the lees filtered as above directed. Our author mentions a way of fermenting fruit-liquors in broad ſhallow vats, not leſs than five feet in diameter, and little more than two feet deep; each vat containing about two hogſheads. In theſe the liquor remains until it has done riſing, or till the fermentation has nearly ceaſed, when it is racked off without ſkimming, the critical juncture being caught before the yeaſt fall; the whole ſinking gradually together as the liquor is drawn off. In this practice alſo the liquor is ſeldom drawn off a ſecond time.

234 Different kinds of cyder, differently fermented.

Cyder is made of three different kinds, viz. *rough*, *ſweet*, and *of a middle richneſs*. The firſt kind being uſually deſigned for ſervants, is made with very little ceremony. "If it is but *zeyder* (ſays Mr Marſhall), and has body enough to keep, no matter for the richneſs and flavour. The rougher it is, the further it will go, and the more acceptable cuſtom has rendered it not only to the workmen but to their maſters. A palate accuſtomed to ſweet cyder would judge the rough cyder of the farm-houſes to be a mixture of vinegar and water, with a little diſſolved alum to give it roughneſs." The method of producing this auſtere liquor is to grind them in a crude under-ripe ſtate, and ſubject the liquor to a full fermentation.—For the ſweet liquor, make choice of the ſweeter fruits: mature them fully; and check the fermentation of the liquor.—To produce liquors of a middle richneſs, the nature of the fruit, as well as the ſeaſon in which it is matured, muſt be conſidered. The fruits to be made choice of are ſuch as yield juices capable of affording a ſufficiency both of richneſs and ſtrength, though much depends upon proper management. Open vats, in our author's opinion, are preferable to cloſe veſſels: but if caſks be uſed at all, they ought to be very large, and not filled; nor ought they to lie upon their ſides, but to be ſet on their ends with their heads out, and to be filled only to ſuch an height as will produce the requiſite degree of fermentation: but in whatever way the liquor be put to ferment, Mr Marſhall is of opinion that the operation ought to be allowed to go on freely for the firſt time; though after being racked off, any ſecond fermentation ought to be prevented as much as poſſible.

235 Of correcting or doctoring the liquors.

V. *Correcting*, provincially called *doctoring*. The imperfections which art attempts to ſupply in theſe liquors are, 1. Want of ſtrength; 2. Want of richneſs. 3. Want of flavour. 4. Want of colour and brightneſs.

The want of ſtrength is ſupplied by brandy or any other ſpirit in ſufficient quantity to prevent the acetous fermentation. The want of richneſs is ſupplied by what are generally termed *ſweets*, but prepared in a manner which our author ſays has never fallen under his notice. To ſupply the want of flavour, an infuſion of hops is ſometimes added, which is ſaid to communicate an agreeable bitter, and at the ſame time a fragrance; whence it becomes a ſubſtitute for the juices of the rind and kernels thrown away to the pigs and poultry, or otherwiſe waſted. The want of colour is ſometimes ſupplied by elder berries, but more generally by burnt ſugar, which gives the deſired colour, and a degree of bitter which is very much liked. The ſugar is prepared either by burning it on a ſalamander, and ſuffering it to drop, as it melts, into water, or by boiling it over the fire (in which caſe brown ſugar is to be uſed), until it acquire an agreeable bitter; then pouring in boiling water in the proportion of a gallon to two lb. of ſugar, and ſtir until the liquor become uniform. A pint of this preparation will colour a hogſhead of cyder. Brightneſs is obtained by a mixture of the blood of bullocks or ſheep; that of ſwine being rejected, though it does not appear to be more unfit for the purpoſe than either of the other two. The only thing neceſſary to be done here is to ſtir the blood well as it is drawn from the animal, to prevent the parts from ſeparating; and it ought to be ſtirred "both ways, for a quarter of an hour." The liquor, however is not always in a proper condition for being refined with this ingredient: on which account a little of it ought frequently to be tried in a vial. A quart or leſs will be ſufficient for a hogſhead. After the blood is poured in, the liquor ſhould be violently agitated, to mix the whole intimately together. This is done by a ſtick ſlit into four, and inſerted into the bung hole; working it briſkly about in the liquor until the whole be thoroughly mixed. In about 24 hours the blood will be ſubſided, and the liquor ought inſtantly to be racked off; as by remaining upon the blood even for two or three days, it will receive a taint not eaſily to be got rid of. It is remarkable that this refinement with the blood carries down not only the fæces, but the colour alſo; rendering the liquor, though ever ſo highly coloured before, almoſt as limpid as water. Iſinglaſs and eggs are ſometimes made uſe of in fining cyder as well as wine.

236 Of laying up, or caſking.

VI. The *laying up* or ſhutting up the cyder in cloſe caſks, according to Mr Marſhall, is as little underſtood as any of the reſt of the parts; the bungs being commonly put in at ſome certain time, or in ſome particular month, without any regard to the ſtate the liquor itſelf is in. "The only criterion (ſays he) I have met with for judging the critical time of laying up, is when a fine white cream-like matter firſt begins to form upon the ſurface. But this may be too late; it is probably a ſymptom at leaſt of the acetous fermentation, which if it take place in any degree muſt be injurious. Yet if the caſks be bunged tight, ſome criterion is neceſſary; otherwiſe, if the vinous fermentation have not yet finally ceaſed, or ſhould recommence, the caſks will be endangered, and the liquor injured. Hence, in the practice of the moſt cautious manager whoſe practice I have had an opportunity of obſerving, the bungs are firſt driven in lightly, when the liquor is fine; and the vinous fermentation is judged to be over; and ſome time afterward, when all danger is paſt, to fill up the caſks, and drive the bungs ſecurely with a rag, and roſin them over at top. Moſt farmers are of opinion, that after the liquor is done fermenting, it ought to have ſomething to *feed upon*; that is, to prevent it from running into the acetous fermentation. For this purpoſe ſome put in parched beans, others egg-ſhells, ſome mutton-ſuet, &c. Mr Marſhall does not doubt that ſomething may be uſeful; and thinks that iſinglaſs may be as proper as any thing that can be got.

237 Bottling.

VII. *Bottling*. This depends greatly on the quality of the liquors themſelves. Good cyder can ſeldom be bottled with propriety under a year old; ſometimes not till two. The proper time is when it has acquired the utmoſt degree of richneſs and flavour in the caſks; and this it will preſerve for many years in bottles. It ought to be quite fine at the time of bottling; or if not ſo naturally, ought to be fined artificially with iſinglaſs and eggs.

238 Of cyderkin.

THE liquor, called *cyderkin*, *purre*, or *perkin*, is made of the murk or groſs matter remaining after the cyder is preſſed out. To make this liquor, the murk is put into a large vat, with a proper quantity of boiled water, which has ſtood till it be cold again: if half the quantity of water be uſed that there was of cyder, it will be good; if the quantities be equal, the cyderkin will be ſmall. The whole is left to infuſe 48 hours, and then well preſſed: what is ſqueezed out by the preſs is immediately tunned up and ſtopped; it is fit to drink in a few days. It clarifies of itſelf, and ſerves in families inſtead of ſmall beer. It will keep, if boiled, after preſſure, with a convenient quantity of hops.

239 Of cyder-wine, according to Dr Ruſh's recipe.

WE muſt not conclude this ſection without particular notice of the liquor called *cyder wine*, which is made from the juice of apples taken from the preſs and *boiled*, and which being kept three or four years is ſaid to reſemble Rheniſh. The method of preparing this wine, as communicated by Dr Ruſh of Pennſylvania, where it is much practiſed, conſiſts in evaporating in a brewing copper the freſh apple-juice till half of it be conſumed. The remainder is then immediately conveyed into a wooden cooler, and afterwards is put into a proper caſk, with an addition of yeaſt, and fermented in the ordinary way. The proceſs is evidently borrowed from what has long been practiſed on the recent juice of the grape, under the term of *vin cuit*, or boiled wine, not only in Italy, but alſo in the iſlands of the Archipelago, from time immemorial.

This proceſs has lately become an object of imitation in the cyder counties, and particularly in the weſt of England, where it is reported that many hundred hogſheads of this wine have already been made; and as it is ſaid to betray no ſign of an impregnation of copper by the uſual chemical teſts, it is conſidered as perfectly wholeſome, and is accordingly drunk without apprehenſion by the common people. Others, however, ſuſpect its innocence; whence it appeared an object of no ſmall moment to determine in ſo doubtful a matter, whether or not the liquor acquires any noxious quality from the copper in which it is boiled.—With this view Dr Fothergill† made a variety of experiments; and the reſult ſeemed to afford a ſtrong preſumption that the cyder wine *does* contain a minute impregnation of copper; not very conſiderable indeed, but yet ſufficient, in the Doctor's opinion, to put the public on their guard concerning a liquor that comes in ſo very "queſtionable a ſhape."

It is a curious chemical fact, he obſerves, if it be really true, that acid liquors, while kept boiling in copper veſſels, acquire little or no impregnation from the metal, but preſently begin to act upon it when left to ſtand in the cold. Can this be owing to the agitation occaſioned by boiling, or the expulſion of the aerial acid? Atmoſpheric air powerfully corrodes copper, probably through the intervention of the aerial or rather nitrous acid, for both are now acknowledged to be preſent in the atmoſphere. But the latter is doubtleſs a much ſtronger menſtruum of copper than the former.

In the preſent proceſs the liquor is properly directed to be paſſed into a wooden cooler as ſoon as the boiling is completed. But as all acids, and even common water, acquire an impregnation and unpleaſant taſte, from ſtanding in copper veſſels in the cold, why may not the acid juice of apples act in ſome degree on the copper before the boiling commences? Add to this, that brewing coppers, without far more care and attention than is generally beſtowed on them in keeping them clean, are extremely apt to contract verdegris, (a rank poiſon), as appears from the blue or green ſtreaks very viſible when theſe veſſels are minutely examined. Should the unfermented juice be thought incapable of acting on the copper either in a cold or boiling ſtate, yet no one will venture to deny its power of waſhing off or diſſolving verdegris already formed on the internal ſurface of the veſſel. Suppoſe only one-eighth part of a grain of verdegris to be contained in a bottle of this wine, a quantity that may elude the ordinary teſts, and that a bottle ſhould be drunk daily by a perſon without producing any violent ſymptom or internal uneaſineſs; yet what perſon in his ſenſes would knowingly chuſe to hazard the experiment of determining how long he could continue even this quantity of a ſlow poiſon in his daily beverage with impunity? And yet it is to be feared the experiment is but too often unthinkingly made, not only with cyder-wine, but alſo with many of the foreign wines prepared by a ſimilar proceſs. For the grape juice, when evaporated in a copper veſſel, under the denomination of *vino cotto*, or boiled wine, cannot but acquire an equal if not yet ſtronger impregnation of the metal, than the juice of apples, ſeeing that verdigris itſelf is manufactured merely by the application of the acid huſks of grapes to plates of copper.

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† *Bath Papers*, vol. v. p. 339.

Independent of the danger of any metallic impregnation, the Doctor thinks it may be juſtly queſtioned how far the proceſs of preparing boiled wines is neceſſary or reconcileable to reaſon or œconomy. The evaporation of the muſt by long boiling not only occaſions an unneceſſary waſte of both liquor and fuel, but alſo diſſipates certain eſſential principles, without which the liquor can never undergo a complete fermentation, and without a complete fermentation there can be no perfect wine. Hence the boiled wines are generally crude, heavy, and flat, liable to produce indigeſtion, flatulency, and diarrhœa. If the evaporation be performed haſtily, the liquor contracts a burnt empyreumatic taſte, as in the preſent inſtance; if ſlowly, the greater is the danger of a metallic impregnation. For the proceſs may be preſumed to be generally performed in a veſſel of braſs or copper, as few families poſſeſs any other that is ſufficiently capacious. Nor can a veſſel of caſt-iron, though perfectly ſafe, be properly recommended for this purpoſe, as it would probably communicate a chalybeate taſte and dark colour to the liquor. At all events, braſs and copper veſſels ought to be entirely baniſhed from this and every other culinary proceſs.

SECT. XI. *On Manures, and the beſt Methods of collecting them.*

240
Of gypſum as a manure.

We have deferred treating on theſe to the laſt part, as they are in fact derived in more or leſs quantity from every operation in huſbandry, though they are undoubtedly the foundation of the whole; for no method yet propoſed for making a ſoil fertile without manure has ever been properly aſcertained to be ſucceſsful. The mode in which they operate has been ſo fully explained under the article AGRICULTURE, that nothing farther ſeems neceſſary to be added in this place. Of late, however, a new manure has been introduced into ſome countries, the operation of which cannot ſo well be explained upon the principles there laid down. This is *Gypſum*. In the eighth volume of the Annals of Agriculture we are informed, that it is commonly uſed as a manure in Switzerland. In the 10th volume of the ſame work, Sir Richard Sutton gives ſome account of an experiment made with it on his eſtate; but in ſuch an inaccurate manner, that nothing could be determined. "The appearance in general (ſays he), I think, was rather againſt the benefit of the plaſter, though not decidedly ſo." He tells us, that its virtues were a ſubject of debate in Germany. In America this ſubſtance ſeems to have met with more ſucceſs than in any other country. In the fifth volume of Bath Papers, Mr Kirkpatrick of the Iſle of Wight, who had himſelf viſited North America, informs us, that it is much uſed in the United States, on account of its cheapneſs and efficacy; though, from what is told in the ſame place, we muſt undoubtedly be led to ſuppoſe, that its *efficacy* muſt be very great before it can be intitled to *cheapneſs*. In the firſt place, it is brought from the hills in the neighbourhood of Paris to Havre de Grace, and from thence exported to America; which of itſelf muſt occaſion a conſiderable expence, though the plaſter were originally given *gratis*. In the next place, it muſt be powdered in a ſtamping mill, and the finer it is powdered ſo much the better. In the third place, it muſt be *ſown* over the ground to be manured with it. The quantity for graſs is ſix buſhels to an acre. It ought to be ſown on dry ground in a wet day; and its efficacy is ſaid to laſt from ſeven to twelve years. It operates entirely as a top dreſſing.

In the 10th volume of Annals of Agriculture, we have ſome extracts from a treatiſe by Mr Powel, preſident of the Philadelphia Society for encouraging Agriculture, upon the ſubject of gypſum as a manure; of the efficacy of which he gives the following inſtances. 1. In October 1786, plaſter of Paris was ſown in a rainy day upon wheat-ſtubble without any previous culture. The crop of wheat had ſcarce been worth reaping, and no kind of graſs ſeed had been ſown upon the ground; nevertheleſs, in the month of June it was covered with a thick mat of white clover, clean and even, from ſix to eight inches in height. A piece of ground adjoining to this white clover was alſo ſown with gypſum, and exhibited a fine appearance of white and red clover mixed with ſpear-graſs. Some wet ground ſown at the ſame time was not in the leaſt improved.—This anecdote reſts entirely on the veracity of an anonymous farmer. 2. Eight buſhels of plaſter of Paris ſpread upon two acres and an half of wheat-ſtubble ground, which the ſpring before had been ſowed with about two pounds of red clover ſeed to the acre for paſture, yielded five tons of hay by the middle of June. A ſmall piece of ground of ſimilar quality, but without any plaſter, produced only one ton and an half in the ſame proportion.—Mr Powel concludes in favour of the effects of the plaſter upon arable as well as graſs land.—Other accounts to the ſame purpoſe have been publiſhed; but it does not appear to have been tried in Britain.

241
Of the more common kinds of manures.

With regard to the other kinds of manure commonly in uſe in this country, their efficacy is well known; the only difficulty is to procure them in ſufficient quantity. —In ſuch lands as lie near the ſea, ſea-weeds offer an unlimited quantity of excellent manure. In the neighbourhood of rivers, the weeds with which they abound offer likewiſe an excellent manure in plenty. Oil-cake, malt-coombs, the refuſe of ſlaughter-houſes, &c. all are excellent where they can be got; but the ſituations which afford theſe are comparatively few; ſo that in moſt caſes the farmer muſt depend much on his own ingenuity and induſtry for raiſing a ſufficient quantity of dung to anſwer his purpoſes; and the methods taken for this purpoſe vary according to the ſituation of different places, or according to the fancy of the huſbandman.

In-

242 Manures uſed in Norfolk.

In all countries where chalk, marle, or lime are to be had, they are certainly to be employed in their proper departments; but beſides theſe, *dung*, properly ſo called, mixed with earth or putrid animal and vegetable ſubſtances, conſtitutes a principal part of the manure. In Norfolk, Mr Marſhall tells us, that the *quality* of dung is attended to with greater preciſion than in moſt other diſtricts. *Town-muck*, as it is called, is held in moſt eſtimation; and the large towns Norwich and Yarmouth ſupply the neighbouring country. As Yarmouth, however, is a maritime place, and otherwiſe in a manner ſurrounded by marſhes, ſtraw is of courſe a ſcarce and dear article: whence, inſtead of littering their horſes with it, they uſe ſand. As the bed becomes ſoiled or wet, freſh ſand is put on, until the whole is in a manner ſaturated with urine and dung, when it is cleared away, and reckoned muck of ſuch excellent quality, that it is ſent for from a very great diſtance. With regard to other kinds of dung, that from horſes fed upon hay and corn is looked upon to be the beſt; that of fatting cattle the next; while the dung of lean cattle, particularly of cows, is ſuppoſed to be greatly inferior, even though turnips make part of their food. The dung of cattle kept on ſtraw alone is looked upon to be of little or no value; while the muck from trodden ſtraw is by ſome thought to be better than that from the ſtraw which is eaten by the lean-ſtock.—Compoſts of dung with earth or marle are very generally uſed.

243 In the Midland diſtrict.

In the midland counties of England, Mr Marſhall informs, the cores of horns cruſhed in a mill have been uſed as manure: though he knows not with what ſucceſs. His only objection is the difficulty of reducing them to powder. Dung is extremely dear in Norfolk; half a guinea being commonly given for a waggon-load driven by five horſes. Great quantities of lime and marle are found in this diſtrict.—With regard to the method of raiſing dung in general, perhaps the obſervations of Mr Marſhall upon the management of the Yorkſhire farmers may be equally ſatisfactory with any thing that has yet been publiſhed on the ſubject.

244 Mr Marſhall's directions for raiſing dung.

“The general practice (ſays he) is to pile the dung on the higheſt part of the yard; or, which is ſtill leſs judicious, to let it lie ſcattered about on the ſide of a ſlope, as it were for the purpoſe of diſſipating its virtues. The urine which does not mix with the dung is almoſt invariably led off the neareſt way to the common ſewer, as if it were thought a nuiſance to the premiſes. That which mixes with the dung is of courſe carried to the *midden*, and aſſiſts in the general diſſipation. A yard of *dung*, nine-tenths of which are ſtraw, will diſcharge, even in dry weather, ſome of its more fluid particles; and in rainy weather, is, notwithſtanding the ſtraw, liable to be waſhed away if expoſed on a riſing ground. But how much more liable to waſte is a mixture of dung and urine, with barely a ſufficiency of ſtraw to keep them together? In dry weather the natural oozing is conſiderable; and in a wet ſeaſon every ſhower of rain waſhes it away in quantities.—The Norfolk method of bottoming the dung-yard with mould is here indiſpenſably neceſſary to common good management. There is no better manure for graſs-lands than mould ſaturated with the oozings of a dunghill: it gets down quicker among the graſs, and has generally a more viſible effect than the dung itſelf. Under this management the arable land would have the ſelfſame dung it now has; while the graſs land would have an annual ſupply of riches, which now run waſte in the ſewers and rivulets.—But before a dung-yard can with propriety be bottomed with mould, the bottom of the yard itſelf ought to be properly formed. A part of it ſituated conveniently for carriages to come at, and low enough to receive the entire drainings of the ſtable, cattle-ſtalls, and hog-ſties, ſhould be hollowed out in the manner of an artificial drinking-pool, with a rim ſomewhat riſing, and with covered drains laid into it from the various ſources of liquid manure. During the ſummer months, at leiſure times, and embracing opportunities of back-carriage, fill the hollow nearly full with mould; ſuch as the ſcowerings of ditches, the ſhovellings of roads, the maiden earth of lanes and waſte corners, the coping of ſtone-quarries, &c. &c. leaving the ſurface ſomewhat diſhed; and within this diſh ſet the dung-pile, carefully keeping up a rim of mould round the baſe of the pile higher than the adjoining ſurface of the yard; equally to prevent extraneous matter from finding its way into the reſervoirs, and to prevent the eſcape of that which falls within its circuit.”

245 Mr Young's experiments on charcoal.

In the firſt volume of the Annals of Agriculture, Mr Young, from a theory that phlogiſton is the food of plants, made ſeveral experiments upon charcoal as a manure; but the reſults were not ſufficiently favourable to induce a trial of it in the large way. It muſt be remembered, that though phlogiſton is very probably the true vegetable food, yet it is phlogiſton *volatilized*, as in putrid animal and vegetable ſubſtances, not in its *fixed* ſtate as in charcoal, which can have any effect. See AGRICULTURE, Part I. Sect. i. *et ſeq.*

A very advantageous method of manuring graſs-lands, when there is an opportunity, is that of overflowing them with water, which is moſtly practiſed with low flat grounds. For an account of the beſt methods in uſe for this purpoſe, ſee the article MEADOW.

Virgilian HUSBANDRY, a term uſed by authors to expreſs that ſort of huſbandry, the precepts of which are ſo beautifully delivered in Virgil's Georgics. The huſbandry in England is Virgilian in general, and is ſeen by the method of paring and burning the ſurface, of raftering or croſs-ploughing, and of the care in deſtroying weeds, upon the ſame principle, and by much the ſame means. In thoſe parts of England along the ſouthern coaſt, where the Romans principally inhabited, not only the practice, but the expreſſions, are in many reſpects the ſame with thoſe of the ancient Romans, many of the terms uſed by the ploughmen being of Latin origin, and the ſame with thoſe uſed by thoſe people on the like occaſions. And on a ſtrict obſervation, more of Virgil's huſbandry is at this time practiſed in England than in Italy itſelf. This change in the Italian

talian huſbandry is, however, much more to the credit of that people, than the retaining the Virgilian ſcheme is to ours.

Tull, who has eſtabliſhed a new method of huſbandry, obſerves, that it is upon the whole ſo contradictory to this old plan, that it may be called the *anti-Virgilian huſbandry;* and adds, that no practice can be worſe than the Virgilian.

HUSK, the ſame with what botaniſts call the *calyx* or *cup* of a flower. See CALYX.

HUSO, in ichthyology. See ACCIPENSER.

HUSS (John). See HUSSITES.

HUSSARS, are the national cavalry of Hungary and Croatia. Their regimentals conſiſt in a rough furred cap, adorned with a cock's feather (the officers either an eagle's or a heron's); a doublet, with a pair of breeches to which the ſtockings are faſtened, and yellow or red boots: beſides, they occaſionally wear a ſhort upper waiſtcoat edged with furs, and five rows of round metal buttons; and in bad weather, a cloak. Their arms are a ſabre, carbine, and piſtols. They are irregular troops; hence, before beginning an attack, they lay themſelves ſo flat on the necks of their horſes, that it is hardly poſſible to diſcern their force; but being come within piſtol-ſhot of the enemy, they raiſe themſelves with ſuch ſurpriſing quickneſs, and begin the fight with ſuch vivacity on every ſide, that, unleſs the enemy is accuſtomed to the method of engaging, it is very difficult for troops to preſerve their order. When a retreat is neceſſary, their horſes have ſo much fire, and are ſo indefatigable, their equipage ſo light, and themſelves ſuch excellent horſemen, that no other cavalry can pretend to follow them. They leap over ditches, and ſwim over rivers, with ſurpriſing facility. They never encamp, and conſequently are not burdened with any camp-equipage, ſaving a kettle and hatchet to every ſix men. They always lie in the woods, out houſes, or villages, in the front of the army. The emperor, queen of Hungary, and king of Pruſſia, have the greateſt number of troops under this name in their ſervice.

HUSSITES, in eccleſiaſtical hiſtory, a party of reformers, the followers of John Huſs.

John Huſs, from whom the Huſſites take their name, was born in a little village in Bohemia, called *Huſs*, and lived at Prague in the higheſt reputation, both on account of the ſanctity of his manners and the purity of his doctrine. He was diſtinguiſhed by his uncommon erudition and eloquence, and performed at the ſame time the functions of profeſſor of divinity in the univerſity, and of ordinary paſtor in the church of that city. He adopted the ſentiments of Wickliffe, and the Waldenſes; and in the year 1407 began openly to oppoſe and preach againſt divers errors in doctrine, as well as corruptions in point of diſcipline, then reigning in the church. Huſs likewiſe endeavoured to the utmoſt of his power to withdraw the univerſity of Prague from the juriſdiction of Gregory XII. whom the kingdom of Bohemia had hitherto acknowledged as the true and lawful head of the church. This occaſioned a violent quarrel between the incenſed archbiſhop of Prague and the zealous reformer, which the latter inflamed and augmented from day to day, by his pathetic exclamations againſt the court of Rome, and the corruptions that prevailed among the ſacerdotal order.

There were other circumſtances that contributed to inflame the reſentment of the clergy againſt him. He adopted the philoſophical opinions of the realiſts, and vehemently oppoſed and even perſecuted the nominaliſts, whoſe number and influence were conſiderable in the univerſity of Prague. He alſo multiplied the number of his enemies in the year 1408, by procuring, through his great credit, a ſentence in favour of the Bohemians, who diſputed with the Germans concerning the number of ſuffrages which their reſpective nations were intitled to in all matters that were carried by election in this univerſity. In conſequence of a decree obtained in favour of the former, which reſtored them to their conſtitutional right of three ſuffrages, uſurped by the latter, the Germans withdrew from Prague, and, in the year 1409, founded a new academy at Leipſick. This event no ſooner happened, than Huſs began to inveigh with greater freedom than he had before done againſt the vices and corruptions of the clergy, and to recommend, in a public manner, the writings and opinions of Wickliffe, as far as they related to the papal hierarchy, the deſpotiſm of the court of Rome, and the corruption of the clergy. Hence an accuſation was brought againſt him, in the year 1410, before the tribunal of John XXIII. by whom he was ſolemnly expelled from the communion of the church. Notwithſtanding this ſentence of excommunication, he proceeded to expoſe the Romiſh church with a fortitude and zeal that were almoſt univerſally applauded.

This eminent man, whoſe piety was equally ſincere and fervent, though his zeal was perhaps too violent, and his prudence not always circumſpect, was ſummoned to appear before the council of Conſtance. Secured, as he apprehended, from the rage of his enemies by the ſafe conduct granted him by the emperor Sigiſmund, for his journey to Conſtance, his reſidence in that place, and his return to his own country, John Huſs obeyed the order of the council, and appeared before it to demonſtrate his innocence, and to prove that the charge of his having deſerted the church of Rome was entirely groundleſs. However, his enemies ſo far prevailed, that by the moſt ſcandalous breach of public faith, he was caſt into priſon, declared a heretic becauſe he refuſed to plead guilty againſt the dictates of his conſcience, in obedience to the council, and burnt alive in 1415; a puniſhment which he endured with unparalleled magnanimity and reſignation.

The ſame unhappy fate was borne by Jerome of Prague, his intimate companion, who attended the council, in order to ſupport his perſecuted friend. Jerome, indeed, was terrified into temporary ſubmiſſion; but he afterwards reſumed his fortitude, and maintained the opinions, which he had for a while deſerted through fear, in the flame in which he expired in 1416.

The diſciples of Huſs adhered to their maſter's doctrine after his death with a zeal which broke out into an open war, that was carried on with the moſt ſavage and unparalleled barbarity. John Ziſka, a Bohemian knight, in 1420, put himſelf at the head of the Huſſites, who were now become a very conſiderable party, and threw off the deſpotic yoke of Sigiſmund, who had treated his brethren in the moſt barbarous manner. Ziſka was ſucceeded by Procopius, in the year 1424. The acts of barbarity that were committed on both ſides were ſhocking and horrible beyond expreſſion: for notwithſtanding the irreconcileable oppoſition between the religious ſentiments of the contending parties, they both agreed in this one horrible principle, that it was innocent and lawful to perſecute and extirpate with fire and ſword the enemies of the true religion; and ſuch they reciprocally appeared to each other. Theſe commotions in a great meaſure ſubſided, by the interference of the council of Baſil, in the year 1433.

The Huſſites, who were divided into two parties, viz. the Calixtines and Taborites ſpread over all Bohemia and Hungary, and even Sileſia and Poland; and there are ſome remains of them ſtill ſubſiſting in all thoſe parts.

HUSTINGS (from the Saxon word *Huſtinge*, i. e. *concilium* or *curia)*, a court held at Guild-hall before the lord-mayor and aldermen of London, and reckoned the ſupreme court of the city. Here deeds may be inrolled, outlawries ſued out, and replevins and writs of error determined. In this court alſo is the election of aldermen, of the four members of Parliament for the city, &c. This court is very ancient, as appears by the laws of Edward the Confeſſor. Some other cities have likewiſe had a court bearing the ſame name, as Wincheſter, York, &c.

HUSUM. a town of Denmark, in the duchy of Sleſwick, and capital of a bailiwick of the ſame name, with a ſtrong citadel, and a very handſome church. It is ſeated near the river Ow, on the German Sea; and is ſubject to the dukes of Holſtein-Gottorp. E. Long. 9. 5. N. Lat. 54. 55.

HUTCHESON (Dr Francis), a very elegant writer and excellent philoſopher, was the ſon of a diſſenting miniſter of the north of Ireland, and was born on the 8th of Auguſt 1694. He early diſcovered a ſuperior capacity; and having gone through a ſchool-education, began his courſe of philoſophy at an academy, whence he removed to the univerſity of Glaſgow, where he applied himſelf to all the parts of literature, in which his progreſs was ſuitable to his uncommon abilities.

He then returned to Ireland; and entering into the miniſtry, was juſt about to be ſettled in a ſmall congregation of diſſenters in the north of Ireland, when ſome gentlemen about Dublin, who knew his great abilities and virtues, invited him to take up a private academy there. He complied with the invitation, and met with much ſucceſs. He had been fixed but a ſhort time in Dublin, when his ſingular merits and accompliſhments made him generally known; and his acquaintance was ſought by men of all ranks, who had any taſte for literature, or any regard for learned men. The late lord viſcount Moleſworth is ſaid to have taken great pleaſure in his converſation, and to have aſſiſted him with his criticiſms and obſervations upon his "Inquiry into the Ideas of Beauty and Virtue," before it came abroad. He received the ſame favour from Dr Synge, lord biſhop of Elphin, with whom he alſo lived in great friendſhip. The firſt edition of this performance came abroad without the author's name, but the merit of it would not ſuffer him to be long concealed. Such was the reputation of the work, and the ideas it had raiſed of the author, that lord Granville, who was then lord-lieutenant of Ireland, ſent his private ſecretary to enquire at the bookſeller's for the author; and when he could not learn his name, he left a letter to be conveyed to him: in conſequence of which he ſoon became acquainted with his excellency, and was treated by him, all the time he continued in his government, with diſtinguiſhed marks of familiarity and eſteem.

From this time his acquaintance began to be ſtill more courted by men of diſtinction either for ſtation or literature in Ireland. Archbiſhop King, the author of the celebrated book *De origine mali*, held him in great eſteem; and the friendſhip of that prelate was of great uſe to him in ſcreening him from two ſeveral attempts made to proſecute him, for daring to take upon him the education of youth, without having qualified himſelf by ſubſcribing the eccleſiaſtical canons, and obtaining a licence from the biſhop. He had alſo a large ſhare in the eſteem of the primate Bolter, who through his influence made a donation to the univerſity of Glaſgow of a yearly fund for an exhibitioner to be bred to any of the learned profeſſions. A few years after his "Inquiry into the Ideas of Beauty and Virtue," his "Treatiſe on the paſſions" was publiſhed: both theſe works have been often reprinted; and always admired, both for the ſentiment and language, even by thoſe who have not aſſented to the philoſophy of them, nor allowed it to have any foundation in nature. About this time he wrote ſome philoſophical papers, accounting for laughter, in a different way from Hobbes, and more honourable to human nature: which papers were publiſhed in the collection called *Hibernicus's Letters*.

After he had taught in a private academy at Dublin for ſeven or eight years with great reputation and ſucceſs, he was called, in the year 1729, to Scotland, to be a profeſſor of philoſophy in the univerſity of Glaſgow. Several young gentlemen came along with him from the academy, and his high reputation drew many more thither both from England and Ireland. Here he ſpent the remainder of his life in a manner highly honourable to himſelf and ornamental to the univerſity of which he was a member. His whole time was divided between his ſtudies and the duties of his office; except what he allotted to friendſhip and ſociety. A firm conſtitution and a pretty uniform ſtate of good health, except ſome few ſlight attacks of the gout, ſeemed to promiſe a longer life; yet he did not exceed the 53d year of his age. He was married, ſoon after his ſettlement in Dublin, to Mrs Mary Wilſon, a gentleman's daughter in the county of Langford; by whom he left behind him one ſon, Francis Hutcheſon, doctor of medicine. By this gentleman was publiſhed, from the original manuſcript of his father, "a ſyſtem of Moral Philoſophy, in three books, by Francis Hutcheſon, L. L. D. at Glaſgow, 1755," in two volumes, 4to,

HUTCHINSON (John), a philoſophical writer, whoſe notions have made no inconſiderable noiſe in the world, was born in 1674. He ſerved the duke of Somerſet in the capacity of ſteward; and in the courſe of his travels from place to place employed himſelf in collecting foſſils: we are told, that the large and noble collection bequeathed by Dr Woodward to the univerſity of Cambridge was actually made by him, and even unfairly obtained from him. When he left the duke's ſervice to indulge his ſtudies with more freedom, the duke, then maſter of the horſe to George I. made him his riding ſurveyor, a kind of ſinecure place of 200l. a-year with a good houſe in the Meuſe. In 1724 he publiſhed the firſt part of *Moſes's Principia*, in which he ridiculed Dr Woodward's Natural Hiſtory of the Earth, and exploded the doctrine of gravitation eſtabliſhed in Newton's *Principia*: in 1727, he publiſhed the ſecond part of *Moſes's Principia*, containing the principles of the Scripture Philoſophy. From this time to his death, he publiſhed a volume every year or two, which, with the MSS. he left behind, were publiſhed in 1748, in 12 vols 8vo. On the Monday before his death, Dr Mead urged him to be bled; ſaying pleaſantly, "I will ſoon ſend you to Moſes," meaning to his ſtudies: but Mr Hutchinſon taking it in the literal ſenſe, anſwered in a muttering tone, "I believe, Doctor, you will;" and was ſo diſpleaſed, that he diſmiſſed him for another phyſician; but died in a few days after, Auguſt 28, 1737. Singular as his notions are, they are not without ſome defenders, who have obtained the appellation of *Hutchinſonians*. The reader may find a diſtinct and comprehenſive account of the Hutchinſonian ſyſtem in a book intitled, *Thoughts concerning Religion*, &c. printed at Edinburgh 1743; and in a letter to a biſhop, annexed to it, firſt printed in 1732.

HUXING of pike, among fiſhermen, a particular method of catching that fiſh.

For this purpoſe, they take 30 or 40 as large bladders as can be got; blow them up, and tie them cloſe and ſtrong; and at the mouth of each tie a line, longer or ſhorter according to the depth of the water. At the end of the line is faſtened an armed hook, artfully baited; and thus they are put into the water with the advantage of the wind, that they may gently move up and down the pond. When a maſter pike has ſtruck himſelf, it affords great entertainment to ſee him bounce about in the water with a bladder faſtened to him; at laſt, when they perceive him almoſt ſpent, they take him up.

HUY, a town of the Netherlands, in the biſhopric of Liege, and capital of Condraſs. It is advantageouſly ſeated on the river Maeſe, over which there is a bridge. E. Long. 10. 22. N. Lat. 52. 31.

HUYGENS (Chriſtian), one of the greateſt mathematicians and aſtronomers of the 17th century, was the ſon of Conſtantine Huygens, lord of Zuylichem, who had ſerved three ſucceſſive princes of Orange in the quality of ſecretary; and was born at the Hague, in 1629. He diſcovered from his infancy an extraordinary fondneſs for the mathematics; in a little time made a great progreſs in them; and perfected himſelf in thoſe ſtudies under the famous profeſſor Schooten, at Leyden. In 1649, he went to Holſtein and Denmark, in the retinue of Henry count of Naſſau; and was extremely deſirous of going to Sweden, in order to ſee Des Cartes, but the count's ſhort ſtay in Denmark would not permit him. He travelled into France and England; was, in 1663, made a member of the Royal Society; and, upon his return into France, M. Colbert, being informed of his merit, ſettled a conſiderable penſion upon him to engage him to fix at Paris; to which Mr Huygens conſented, and ſtaid there from the year 1666 to 1681, where he was admitted a member of the academy of Sciences. He loved a quiet and ſtudious manner of life, and frequently retired into the country to avoid interruption, but did not contract that moroſeneſs which is ſo frequently the effect of ſolitude and retirement. He was the firſt who diſcovered Saturn's ring, and a third ſatellite belonging to that planet, which had hitherto eſcaped the eyes of aſtronomers. He diſcovered the means of rendering clocks exact, by applying the pendulum, and rendering all its vibrations equal by the cycloid. He brought teleſcopes to perfection, made many other uſeful diſcoveries, and died at the Hague in 1695. He was the author of ſeveral excellent works. The principal of theſe are contained in two collections; the firſt of which was printed at Leyden in 1682, in quarto, under the title of *Opera varia*; and the ſecond at Amſterdam in 1728, in two volumes quarto, intitled *Opera reliqua*.

HUYSUM, the name of ſeveral Dutch painters; the moſt celebrated of whom was John, whoſe ſubjects were flowers, fruit, and landſcapes. According to Mr Pilkington, this illuſtrious painter hath ſurpaſſed all who have ever painted in that ſtyle; and his works excite as much ſurpriſe by their finiſhing as they excite admiration by their truth. He was born at Amſterdam in 1682, and was a diſciple of Juſtus van Huyſum his father. He ſet out in his profeſſion with a moſt commendable principle, not ſo much to paint for the acquiſition of money as of fame; and therefore he did not aim at expedition, but at delicacy, and, if poſſible, to arrive at perfection in his art. Having attentively ſtudied the pictures of Mignon, and all other artiſts of diſtinction who had painted in his own ſtyle, he tried which manner would ſooneſt lead him to imitate the lightneſs and ſingular beauties of each flower, fruit, or plant, and then fixed on a manner peculiar to himſelf, which ſeems almoſt inimitable. His pictures are finiſhed with inconceivable truth; for he painted every thing after nature, and was ſo ſingularly exact, as to watch even the hour of the day in which his model appeared in its greateſt perfection. By the judicious he was accounted to paint with greater freedom than Mignon or Brueghel; with more tenderneſs and nature than Mario da Fiori, Michael Angelo di Campidoglio, or Segers; with more mellowneſs then De Heem; and greater force of colouring than Baptiſt. His reputation roſe to ſuch a height at laſt, that he fixed immoderate prices on his works; ſo that none but princes, or thoſe of princely fortunes, could pretend to become purchaſers. Six of his paintings were ſold at public ſale in Holland for prices that were almoſt incredible. One of them, a flower piece, for fourteen hundred and fifty guilders; a fruit piece for a thouſand and five guilders; and the ſmaller pictures for nine hundred. The vaſt ſums which van Huyſum received for his works, cauſed him to redouble his endeavours to excel; no perſon was admitted into his room while he was painting, not even his brothers; and his method of mixing the tints, and preſerving the luſtre of his colours, was an impenetrable ſecret, which he never would diſcloſe. Yet this conduct is certainly not to his honour, but rather an argument of a low mind, fearful of being equalled or ſurpaſſed. From the ſame principle, he would never take any diſciples, except one lady, named Haverman; and he grew envious and jealous even of her merit. By ſeveral domeſtic diſquiets his temper became changed; he grew moroſe, fretful, and apt to withdraw himſelf from ſociety. He had many enviers of his fame, which has ever been the ſevere lot of the moſt deſerving in all profeſſions; but he continued to work, and his reputation never diminiſhed. It is univerſally agreed that he has excelled all who have painted fruit and flowers before him, by the confeſſed ſuperiority of his touch, by the delicacy of his pencil, and by an amazing manner of finiſhing; nor does it appear probable that any future artiſt will become his competitor. The care which he took to purify his oils and prepare his colours, and the various experiments he made to diſcover the moſt luſtrous and durable, are inſtances of extraordinary care and induſtry as well as capacity. From having obſerved ſome of his works that were perfectly finiſhed, ſome only half finiſhed, and others only begun, the principles by which he conducted himſelf may perhaps be diſcoverable. His cloths were prepared with the greateſt care, and primed with white, with all poſſible purity, to prevent his colours from being obſcured, as he laid them on very lightly. He glazed all other colours except the clear and tranſparent, not omitting even the white ones, till he found the exact tone of the colour; and over that he finiſhed the forms, the lights, the ſhadows, and the reflections, which are all executed with preciſion and warmth, without dryneſs or negligence. The greateſt truth, united with the greateſt brilliancy, and a velvet ſoftneſs on the ſurface of his objects, are viſible in every part of his compoſitions; and as to his touch, it looks like the pencil of nature. Whenever he repreſented flowers placed in vaſes, he always painted thoſe vaſes after ſome elegant model, and the bas-relief is as exquiſitely finiſhed as any of the other parts. Through the whole he ſhows a delicate compoſition, a fine harmony, and a moſt happy effect of light and ſhadow. Thoſe pictures which he painted on a clear ground are preferred to others of his hand, as having greater luſtre, and as they demanded more care and exactneſs in the finiſhing; yet there are ſome on a darkiſh ground, in which appears rather more force and harmony. It is obſerved of him, that in the grouping of his flowers, he generally deſigned thoſe which were brighteſt in the centre, and gradually decreaſed the force of his colour from the centre to the extremities. The birds neſts and their eggs, the feathers, inſects, and drops of dew, are expreſſed with the utmoſt truth, ſo as even to deceive the ſpectator. And yet, after all this merited and juſt praiſe, it cannot but be confeſſed, that ſometimes his fruits appear like wax or ivory, without that peculiar ſoftneſs and warmth, which is conſtantly obſervable in nature. Beſides his merit as a flower painter, he alſo painted landſcapes with great applauſe. They are well compoſed; and although he had never ſeen Rome, he adorned his ſcenes with the noble remains of ancient magnificence which are in that city. His pictures in that ſtyle are well coloured, and every tree is diſtinguiſhed by a touch that is proper for the leafing. The grounds are well broken, and diſpoſed with taſte and judgment; the figures are deſigned in the manner of Laireſſe, highly finiſhed, and touched with a great deal of ſpirit; and through the whole compoſition, the ſcenes repreſent Italy, in the trees, the clouds, and the ſkies. He died in 1749, aged 67.

HUZZOOR, a Hindoſtan word ſignifying *The preſence*; applied, by way of eminence, to the Mogul's court. According to polite uſage, it is now applied to the preſence of every Nabob or great man.

Huzzoor Neves; the ſecretary who reſides at court, and keeps copies of all *firmauns*, records, or letters.

HYACINTH, in natural Hiſtory, a genus of pellucid gems, whoſe colour is red with an admixture of yellow.

The hyacinth, though leſs ſtriking to the eye than any other red gem, is not without its beauty in the fineſt ſpecimens. It is found of various ſizes, from that of a pin's head to the third of an inch in diameter. They are harder than quartz-cryſtals; tranſparent, and formed into priſms pointed at both ends. Theſe points are always regular with regard to the number of facets; being four on each facet, but the latter ſeldom: the ſides of the main body are alſo very uncertain, in regard both to their number and ſhape; being found of four, five, ſix, ſeven, and ſometimes of eight ſides; ſometimes being ſo compreſſed as almoſt to reſemble the face of a ſpherical facetted garnet. Sometimes they are of a dodecaedral form like the garnet, but with more obtuſe angles. The ſpecific gravity of the hyacinth, according to Dutans, is 2.631; but Rome de L'iſle ſays that Briſon found it to be 3.6873; and the European hyacinths to be 3.760.

The hyacinth, as well as all other gems, is divided into oriental and occidental; the former being very hard and brilliant, ſo that they are frequently ranked among the topazes; but when ſoft, they are ſuppoſed to belong to the garnet kind, as mentioned under that article. The hyacinths, however, may generally be diſtinguiſhed from the garnets by loſing their colour in the fire, becoming white, and not melting. There is a kind of a yellow-brown hyacinth, reſembling the colour of honey, which is diſtinguiſhed from the reſt by the remarkable property of not being electrical, and being likewiſe inferior in hardneſs.

Our jewellers allow all thoſe gems to be hyacinths or jacinths that are of a due hardneſs with the mixed colour abovementioned; and as they are of very different beauty and value in their ſeveral degrees and mixture of colours, they divide them into four kinds; three of which they call *hyacinths*, but the fourth, very improperly, a *ruby*. 1. When the ſtone is in its moſt perfect ſtate, and of a pure and bright flame-colour, neither the red nor the yellow prevailing, in this ſtate they call it *hyacintha la belle*. 2. When it has an over-proportion of the red, and that of a duſkier colour than the fine high red in the former, and the yellow that appears in a faint degree in it, is not a fine, bright, and clear, but a duſky browniſh yellow, then they call it the *ſaffron hyacinth*. 3. Such ſtones as are of a dead whitiſh yellow, with a very ſmall proportion of red in them, they call *amber-hyacinths*. And, 4. When the ſtone is of a fine deep red, blended with a duſky and very deep yellow, they call it a *rubacelle*.

But though the over proportion of a ſtrong red in this gem has made people refer it to the claſs of rubies, its evident mixture of yellow ſhows that it truly belongs to the hyacinth.

The hyacinth la belle is found both in the Eaſt and Weſt Indies. The oriental is the harder, but the American is often equal to it in colour. The rubacelle is found only in the Eaſt Indies, and is generally brought over among the rubies; but it is of little value: the other varieties are found in Sileſia and Bohemia.

HYACINTHUS, hyacinth, in botany: A genus of the monogynia order, belonging to the hexandria claſs of plants; and in the natural method ranking under the 10th order, *Coronariæ*. The corolla is campanulated, and there are three melliferous pores at the top of the germen. There are ſix ſpecies; of which the moſt remarkable is the orientalis, or eaſtern hyacinth. Of this there are a great number of varieties, amounting to ſome hundreds, each of which differs from the reſt in ſome reſpect or other. This plant hath a large, purpliſh, bulbous root, ſending up ſeveral narrow erect leaves eight or ten inches long; the flower ſtalk is upright, robuſt, and ſucculent, from 10 to 15 inches in height: adorned upward with many large funnel or bell ſhaped flowers, ſwelling at the baſe, and cut half way into ſix parts; collected into a large pyramidal ſpike of different colours in the varieties; flowering in April or May.

Theſe plants are cultivated with the greateſt ſucceſs in Holland, from whence great numbers are annually imported into Britain. Each variety is by the floriſts diſtinguiſhed either by the name of the place where firſt raiſed, or the perſon who raiſed them, or the names of illuſtrious perſonages, as of kings, generals, poets, and celebrated ancient hiſtorians, gods, goddeſſes, &c. They are ſold by all the ſeed-dealers. The prices are from three pence per root to five or ten pounds or more; and ſome varieties are in ſuch high eſteem among the floriſts, that 20*l.* or 30*l.* will be given for a ſingle bulb. They are hardy, and will proſper any where, though the fine kinds require a little ſhelter during the winter. They may be propagated either by ſeeds or off-ſets from the roots.

The properties of a good oriental hyacinth are, a ſtem perfectly upright, of moderate length, and ſo ſtrong and well-proportioned that it will ſuſtain the weight of the florets without bending: the florets ſhould be large, ſwelling below, expanded above, and numerous, 10 or 15 at leaſt, but are often 20 or 30 in number; and ſhould be placed equally round the ſtem, the pedicles on which they grow longer below than above, diminiſhing gradually in length upward in ſuch a manner as to repreſent a pyramid, and each pedicle ſufficiently ſtrong to ſupport the florets without drooping. The curious in theſe plants are careful never to plant the fine ſorts two years together in the ſame bed of earth; for by planting them every year in a freſh bed, the beauty of the flowers is greatly improved.

HYACINTHIA, in antiquity, feaſts held at Sparta, in honour of Apollo, and in commemoration of his favourite Hyacinth.

This Hyacinth was the ſon of Amyclas king of Sparta, and was beloved both by Apollo and Zephyrus. The youth ſhowing moſt inclination to the former, his rival grew jealous; and, to be revenged, one day as Apollo was playing at the diſcus, i. e. quoits, with Hyacinth, Zephyrus turned the direction of a quoit which Apollo had pitched full upon the head of the unhappy Hyacinth, who fell down dead. Apollo then transformed him into a flower of the ſame name; and as a farther token of reſpect, they ſay, commanded this feaſt. The Hyacinthia laſted three days; the firſt and third whereof were employed in bewailing the death of Hyacinth, and the ſecond in feaſting and rejoicing.

HYADES, in aſtronomy, are ſeven ſtars in the bull's head, famous among the poets for the bringing of rain. Whence their name Υαδης, from the Greek υειν "to rain." The principal of them is in the left eye, by the Arabs called *aldebaran*.

The poets feign them the daughters of Atlas and Pleone. Their brother Hyas being torn to pieces by a lioneſs, they wept his death with ſuch vehemence, that the gods, in compaſſion to them, tranſlated them into heaven, and placed them in the bull's forehead, where they continue to weep; this conſtellation being ſuppoſed to preſage rain. Others repreſent the Hyades as Bacchus's nurſes; and the ſame with the Dodonides, who fearing the reſentment of Juno, and flying from the cruelty of king Lycurgus, were tranſlated by Jupiter into heaven.

HYÆNA, in zoology, ſee Canis.

HYÆNIUS lapis, in natural hiſtory, the name of a ſtone ſaid to be found in the eyes of the hyæna. Pliny tells us, that thoſe creatures were in old times hunted and deſtroyed for the ſake of theſe ſtones, and that it was ſuppoſed they gave a man the gift of prophecy by being put under his tongue.

HYBERNACULUM, in botany, winter-quarters; defined by Linnæus to be part of the plant which defends the embryo herb from injuries during the ſeverities of the winter. See Bulb and Gemma.

HYBLA (anc. geog.), or Megara; which laſt name it took from the Megareans, who led thither a colony; called alſo *Hybla Parva*, and *Galeotis*. In Strabo's time Megara was extinct, but the name *Hybla* remained on account of its excellent honey named from it. It was ſituated on the eaſt coaſt of Sicily, between Syracuſe and the Leontines. *Galeotæ*, and *Megarenſes*, the names of the people, who were of a prophetic ſpirit, being the deſcendants of Galeus the ſon of Apollo. *Hyblæus* the epithet.—The *Hyblæi colles*, ſmall eminences at the ſprings of the Alabus near this place, were famous for their variety of flowers, eſpecially thyme; the honey gathered from which was by the ancients reckoned the beſt in the world, excepting that of Hymettus in Attica. By the moderns it was called *Mel Poſſi*, for the ſame reaſon, namely, on account of its excellent honey, and extraordinary fertility, till it was overwhelmed by the lava of Ætna; and having then become totally barren, its name was changed to *Mal Paſſi*. In a ſecond eruption, by a ſhower of aſhes from the mountain, it ſoon reaſſumed its ancient beauty and fertility, and for many years was called *Bel Paſſi*: and laſt of all, in the year 1669, it was again laid under an ocean of fire, and reduced to the moſt wretched ſterility; ſince which time it is again known by the appellation of *Mal Paſſi*. However, the lava in its courſe over this beautiful country has left ſeveral little iſlands or hillocks, juſt ſufficient to ſhow what it formerly was. Theſe make a ſingular appearance in all the bloom of the moſt luxuriant vegetation, ſurrounded and rendered almoſt inacceſſible by large fields of black and rugged lava.

Hybla-Major, (anc. geog.), was ſituated in the tract lying between mount Ætna and the river Symethus. In Pauſanias's time deſolate.

Hybla-Minor, or *Heræa*, (anc. geog.), an inland town of Sicily, ſituated between the rivers Oanus and Herminius; now Ragusa.

HYBRIDA planta, a monſtrous production of two different ſpecies of plants, analogous to a mule among animals. The ſeeds of hybrid plants will not propagate.

HYBRISTICA, (of *υϐρις injury*), in antiquity, a ſolemn feaſt held among the Greeks, with ſacrifices and other ceremonies; at which the men attended in the apparel of women, and the women in that of men, to do honour to Venus in quality either of a god or a goddeſs, or both. Or, according to the account given by others, the hybriſtica was a feaſt celebrated at Argos, wherein the women being dreſſed like men, inſulted their huſbands, and treated them with all marks of ſuperiority, in the memory of the Argian dames having anciently defended their country with ſingular courage againſt Cleomenes and Demaratus.

Plutarch ſpeaks of this feaſt in his treatiſe of the great actions of women. The name, he obſerves, ſignifies infamy; which is well accommodated to the occaſion, wherein the women ſtrutted about in men's clothes, while the men were obliged to dangle in petticoats.

HYDATIDES, in medicine, little tranſparent veſicles or bladders full of water, ſometimes found ſolitary, and ſometimes in cluſters, upon the liver and various other parts, eſpecially in hydropical caſes.

HYDATOSCOPIA, called alſo hydromancy, a kind of divination or method of foretelling future events by water.

HYDE (Edward), earl of Clarendon, and lord high chancellor of England, was deſcended from an ancient family in Cheſhire, and born at Dinton near Hindon, in Wiltſhire, in 1608. He was entered of Magdalen-hall, Oxford, where, in 1625, he took the degree of A. B. and afterwards ſtudied the law in the Middle-Temple. In the parliament which begun at Weſtminſter April 10, 1640, he ſerved for Wotton-Baſſet in Wiltſhire. But that parliament being ſoon after diſſolved, he was choſen for Saltaſh in Cornwall in the long parliament. His abilities were much taken notice of, and he was employed in ſeveral committees to examine into divers grievances; but at laſt being diſſatisfied with the proceedings in the parliament, he retired to the king, and was made chancellor of the exchequer, a privy-councellor, and knight. Upon the declining of the king's cauſe, he went to France, where after the death of king Charles I. he was ſworn of the privy council to Charles II. In 1649, he and the lord Cottington were ſent ambaſſadors extraordinary into Spain, and in 1657 he was conſtituted lord high chancellor of England. The year before the reſtoration, the duke of York fell in love with Mrs Anne Hyde, the lord chancellor's eldeſt daughter, but carefully concealed the amour both from the king and chancellor. As it was by a promiſe of marriage, however, that he had gained upon her, he was afterwards induced to fulfil his engagement, and the ceremony was performed after the reſtoration. Upon the reſtoration, her father was choſen chancellor of the univerſity of Oxford; and ſoon after created baron Hindon, in Wiltſhire, viſcount Cornbury in Oxfordſhire, and earl of Clarendon in Wiltſhire; and on the death of Henry lord Falkland, was made lord lieutenant of Oxfordſhire. He took care neither to load the king's prerogative, nor encroach upon the liberties of the people; and therefore would not ſet aſide the petition of right, nor endeavour to raiſe the ſtar-chamber or high-commiſſion courts again: nor did he attempt to repeal the bill for triennial parliaments; and when he might have obtained two millions for a ſtanding revenue, he aſked but one million two hundred thouſand pounds *per annum*, which he thought would ſtill put the king upon the neceſſity of having recourſe to his parliament. In this juſt conduct he is ſaid to have been influenced by the following incident, which happened ſome years before. When he firſt began to grow eminent in the law he went down to viſit his father in Wiltſhire; who, one day as they were walking in the fields together, obſerved to him, that men of his profeſſion were apt to ſtretch the prerogative too far, and to injure liberty; but charged him, if ever he came to any eminence in his profeſſion, never to ſacrifice the laws and liberty of his country to his own intereſt or the will of his prince: he repeated his advice twice; and immediately falling into a fit of an apoplexy, died in a few hours: and this circumſtance had a laſting influence upon him. In 1662, he oppoſed a propoſal for the king's marriage with the infanta of Portugal, and the ſale of Dunkirk; however, the following year, articles of high treaſon were exhibited againſt him by the earl of Briſtol; but they were rejected by the houſe of lords. In 1664, he oppoſed the war with Holland. In Auguſt 1667, he was removed from his poſt of lord chancellor; and in November following impeached of high treaſon and other crimes and miſdemeanors by the houſe of commons: upon which he retired into France, when a bill was paſſed for baniſhing him from the king's dominions. See Britain, nº 211, 217. He reſided at Rouen in Normandy; and dying there in 1674, his body was brought to England and interred in Weſtminſter-abbey. He wrote, 1. A hiſtory of the rebellion, 3 vols folio, and 6 vols octavo; a ſecond part of which was lately bequeathed to the public by his lordſhip's deſcendant the late lord Hyde and Cornbury. 2. A letter to the duke of York, and another to the ducheſs of York, upon occaſion of their embracing the Romiſh religion. 3. An anſwer to Hobbes's Leviathan. 4. A hiſtory of the rebellion and civil wars in Ireland, octavo, and ſome other works.

The reverend Mr Granger, in his Biographical Hiſtory of England, obſerves, that "the virtue of the earl of Clarendon was of too ſtubborn a nature for the age of Charles II. Could he have been content (ſays he) to have enſlaved millions, he might have been more a monarch than an unprincely king. But he did not only look upon himſelf as the guardian of the laws and liberties of his country, but had alſo a pride in his nature that was above vice; and choſe rather to be a victim himſelf, than ſacrifice his integrity. He had only one part to act, which was that of an honeſt man. His enemies allowed themſelves a much greater latitude; they loaded him with calumnies, blamed him even for their own errors and miſconduct, and helped to ruin him by ſuch buffooneries as he deſpiſed. He was a much greater, perhaps a much happier, man, alone and in exile, than Charles the Second upon his throne."

And the following character of this nobleman is given by Mr Walpole. "Sir Edward Hyde (ſays he), who oppoſed an arbitrary court, and embraced the party of an afflicted one, muſt be allowed to have acted conſcientiouſly. A better proof was his behaviour on the reſtoration, when the torrent of an infatuated nation intreated the king and his miniſter to be abſolute. Had Clarendon ſought nothing but power, his power had never ceaſed. A corrupted court and a blinded populace were leſs the cauſes of the chancellor's fall, than an ungrateful king, who could not pardon his lordſhip's having refuſed to accept for him the ſlavery of his country. Like juſtice herſelf, he held the balance between the neceſſary power of the ſupreme magiſtrate and the intereſts of the people. This never-dying obligation his cotemporaries were taught to overlook and clamour againſt, till they removed the only man, who, if he could, would have corrected his maſter's evil government. Almoſt every virtue of a miniſter made his character venerable. As an hiſtorian, he ſeems more exceptionable. His majeſty and eloquence, his power of painting characters, his knowledge of his ſubject, rank him in the firſt claſs of writers; yet he has both great and little faults. Of the latter, his ſtories of ghoſts and omens are not to be defended. His capital fault is his whole work being a laboured juſtification of king Charles. If he relates faults, ſome palliating epithet always ſlides in; and he has the art of breaking his darkeſt ſhades with gleams of light that take off all impreſſion of horror. One may pronounce on my lord Clarendon, in his double capacity of ſtateſman and hiſtorian, that he acted for liberty, but wrote for prerogative."

Hyde (Dr Thomas), profeſſor of Arabic at Oxford, and one of the moſt learned writers of the 17th century, was born in 1636; and ſtudied firſt at Cambridge, and afterwards at Oxford. Before he was 18 years of age, he was ſent from Cambridge to London to aſſiſt Mr Brian Walton in the great work of the Polyglot Bible; and about that period undertook to tranſcribe the Perſian Pentateuch out of the Hebrew characters, which archbiſhop Uſher, who well knew the difficulty of the undertaking, pronounced to be an impoſſible taſk unleſs to a native Perſian. After he had happily ſucceeded in this, he aſſiſted in correcting ſeveral parts of Mr Walton's work, for which he was perfectly qualified. He was made archdeacon of Glouceſter, canon of Chriſt-church, head keeper of the Bodleian library, and profeſſor both of Hebrew and Arabic, in the univerſity of Oxford. He was interpreter and ſecretary of the Oriental languages, during the reigns of Charles II. James II. and William III.; and was perfectly qualified to fill this poſt, as he could converſe in the languages which he underſtood. There never was an Engliſhman in his ſituation of life who made ſo great a progreſs; but his mind was ſo engroſſed by his beloved ſtudies, that he is ſaid to have been but ill qualified to appear to any advantage in common converſation. Of all his learned works (the very catalogue of which, as obſerved by Anth. Wood, is a curioſity), his *Religio Veterum Perſarum* is the moſt celebrated. Dr Gregory Sharpe, the late learned and ingenious maſter of the Temple, has collected ſeveral of his pieces formerly printed, and republiſhed them, with ſome additional diſſertations, and his life prefixed, in two elegant volumes quarto. This great man died on the 18th of February, 1702. Among his other works are, 1. A Latin tranſlation of Ulug Beg's obſervations on the longitude and latitude of the fixed ſtars; and, 2. A catalogue of the printed books in the Bodleian library.

HYDNUM, in botany: A genus of the natural order of fungi, belonging to the cryptogamia claſs of plants. The fungus is echinated or prickly on the under ſide. One of the ſpecies, named the *Imbricatum*, is a native of Britain, and is found in woods. It hath a convex hat, tiled, ſtanding on a ſmooth pillar, of a pale fleſh-colour, with white prickles. It is eaten in Italy, and is ſaid to be of a very delicate taſte.

HYDRA, in fabulous hiſtory, a ſerpent in the marſh of Lerna, in Peloponneſus, repreſented by the poets with many heads, one of which being cut off, another immediately ſucceeded in its place, unleſs the wound was inſtantly cauterized. Hercules attacked this monſter; and having cauſed Iolaus to hew down wood for flaming brands, as he cut off the heads he applied the brands to the wounds, by which means he deſtroyed the Hydra.

This hydra with many heads is ſaid to have been only a multitude of ſerpents, which infeſted the marſhes of Lerna near Mycene, and which ſeemed to multiply as they were deſtroyed. Hercules, with the aſſiſtance of his companions, cleared the country of them, by burning the reeds in which they lodged.

Hydra, in aſtronomy, a ſouthern conſtellation, conſiſting of a number of ſtars, imagined to repreſent a water ſerpent. The ſtars in Hydra, in Ptolemy's catalogue, are twenty-ſeven; in Tycho's, nineteen; in Hevelius's, thirty-one.

Hydra, in zoology; a genus of the order of zoophyta, belonging to the claſs of vermes. There are ſeveral ſpecies, known by the general name of polypes. See Polype; and Animalcule, n° 24. *& ſeq.*

HYDRAGOGUES, among phyſicians, remedies which evacuate a large quantity of water in dropſies. The word is formed of υδωρ *water*, and αλειν *to draw* or *lead*; but the application of the term proceeds upon a miſtaken ſuppoſition, that every purgative had ſome particular humour which it would evacuate, and which could not be evacuated by any other. It is now, however, diſcovered, that all ſtrong purgatives will prove *hydragogues*, if given in large quantity, or in weak conſtitutions. The principal medicines recommended as hydragogues, are the juice of elder, the root of iris, foldanella, mechoacan, jalap, &c.

HYDRANGEA, in botany: a genus of the digynia order, belonging to the decandria claſs of plants; and in the natural method ranking under the 13th order, *Succulentæ*. The capſule is bilocular, biroſtrated, and cut round, or parting horizontally. There is but one ſpecies, *viz.* the arboreſcens, a native of North America, from whence it hath lately been ſent to Europe, and is preſerved in gardens, more for the ſake of variety than beauty. It riſes about three feet high; and hath many ſoft pithy ſtalks, garniſhed with two oblong heart-ſhaped leaves placed oppoſite. The flowers are produced at the top of the ſtalks in a corymbus. They are white, compoſed of five petals with ten ſtamina ſurrounding the ſtyle. It is eaſily propagated by parting the roots; the beſt time for which is the end of October. The plants thrive beſt in a moiſt ſoil, and require to be ſheltered from ſevere froſts.

HYDRASTIS, in botany: A genus of the polygamia order, belonging to the polyandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. There is neither calyx nor nectarium; there are three petals; and the berry is compoſed of monoſpermous acini.

HYDRARGYRUM, a name given to mercury, or quickſilver. The word is formed of υδωρ *aqua*, "water," and αργυρος, *argentum*, "ſilver; q. d. *water of ſilver*, on account of its reſembling liquid or melted ſilver.

HYDRAULICS, the ſcience of the motion of fluids, and the conſtruction of all kinds of inſtruments and machines relating thereto. See HYDROSTATICS, ſect. iv.

HYDRENTEROCELE, in ſurgery, a ſpecies of hernia, wherein the inteſtines deſcend into the ſcrotum, together with a quantity of water.

HYDROCELE, in ſurgery, denotes any hernia ariſing from water; but is particularly uſed for ſuch a one of the ſcrotum, which ſometimes grows to the ſize of one's head, without pain, but exceedingly troubleſome to the patient. See SURGERY.

HYDROCEPHALUS, a preternatural diſtenſion of the head to an uncommon ſize by a ſtagnation and extravaſation of the lymph; which, when collected in the inſide of the cranium, is then termed *internal;* as that collected on the outſide is termed *external.* See (the *Index* ſubjoined to) MEDICINE.

HYDROCHARIS, the LITTLE WATER-LILY: A genus of the anneandria order, belonging to the diœcia claſs of plants; and in the natural method ranking under the firſt order, *Palmæ.* The ſpatha of the male is diphyllous; the calyx trifid; the corolla tripetalous; the three interior filaments ſtyliferous. The female calyx trifid; the corolla tripetalous; the ſtyles ſix; the capſule has ſix cells, and is polyſpermous inferior. There is only one ſpecies, a native of Britain, growing in ſlow ſtreams and wet ditches. It hath kidney-ſhaped leaves, thick, ſmooth, and of a browniſh green colour, with white bloſſoms. There is a variety with double flowers of a very ſweet ſmell.

HYDROCOTYLE, WATER-NAVELWORT: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking under the 45th order, *Umbellatæ.* The umbel is ſimple; the involucrum tetraphyllous; the petals entire; the ſeeds are half round and compreſſed. There are ſeveral ſpecies, none of which are ever cultivated in gardens. One of them, a native of Britain, growing in marſhy grounds, is ſuppoſed by the farmers to occaſion the rot in ſheep. The leaves have central leaf-ſtalks, with about five flowers in a rundle; the petals are of a reddiſh white.

HYDROGRAPHY, the art of meaſuring and deſcribing the ſea, rivers, canals, lakes, &c.—With regard to the ſea, it gives an account of its tides, counter-tides, ſoundings, bays gulphs, creeks, &c.; as alſo of the rocks, ſhelves, ſands, ſhallows, promontories, harbours; the diſtance and bearing of one port from another; with every thing that is remarkable, whether out at ſea or on the coaſt.

HYDROLEA, in botany: A genus of the digynia order, belonging to the pentandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The calyx is pentaphyllous; the corolla rotaceous; the filaments at the baſe are cordate; the capſule is bilocular and bivalved.

HYDROMANCY, a method of divination by water, practiſed by the ancients. See DIVINATION, n° 7.

HYDROMEL, honey diluted in nearly an equal weight of water. When this liquor has not fermented, it is called *ſimple hydromel;* and when it has undergone the ſpirituous fermentation, it is called the *vinous hydromel* or *mead.*

Honey, like all ſaccharine ſubſtances, vegetable or animal, is ſuſceptible of fermentation in general, and particularly of the ſpirituous fermentation. To induce this fermentation, nothing is neceſſary but to dilute it ſufficiently in water, and to leave this liquor expoſed to a convenient degree of heat. To make good vinous hydromel or mead, the whiteſt, pureſt, and beſt taſted honey muſt be choſen; and this muſt be put into a kettle with more than its weight of water: a part of this liquor muſt be evaporated by boiling, and the liquor ſcummed, till its conſiſtence is ſuch that a freſh egg ſhall be ſupported upon its ſurface without ſinking more than half its thickneſs into the liquor; then the liquor is to be ſtrained and poured through a funnel into a barrel: this barrel, which ought to be nearly full, muſt be expoſed to a heat as equable as is poſſible, from 20 to 27 or 28 degrees of Mr Reaumur's thermometer, taking care that the bung-hole be ſlightly covered, but not cloſed. The phenomena of the ſpirituous fermentation will appear in this liquor, and will ſubſiſt during two or three months, according to the degree of heat; after which they will diminiſh and ceaſe. During this fermentation, the barrel muſt be filled up occaſionally with more of the ſame kind of liquor of honey, ſome of which ought to be kept apart on purpoſe to replace the liquor which flows out of the barrel in froth. When the fermentation ceaſes, and the liquor has become very vinous, the barrel is then to be put in a cellar and well cloſed. A year afterwards the mead will be fit to put into bottles.

The vinous hydromel or mead is an agreeable kind of wine; nevertheleſs it retains long a taſte of honey, which is unpleaſing to ſome perſons; but this taſte it is ſaid to loſe entirely by being kept a very long time.

The ſpirituous fermentation of honey, as alſo that of ſugar, and of the moſt of vinous liquors, when it is very ſaccharine, is generally more difficultly effected, requires more heat, and continues longer than that of ordinary wines made from the juice of grapes; and theſe vinous liquors always preſerve a ſaccharine taſte.

which ſhows that a part of them is become ſpirituous.

HYDROMETER, an inſtrument to meaſure the gravity, denſity, velocity, force, &c. of water and other fluids. See HYDROSTATICS, n° 13.

Though this inſtrument is incapable of determining the ſpecific gravity of liquors with perfect accuracy, yet in the way of public buſineſs it has undoubtedly the advantage of every other, on account of the eaſe and expedition with which it can be uſed; and for this reaſon it has been adopted by government, in order to determine the ſtrength of ſpirituous liquors. Dr Blagden, who was lately employed to make experiments on this ſubject, is of opinion, that glaſs is the moſt proper material for the conſtruction of an hydrometer. Its ſenſibility depends on the ſize of its ſtem. In the old areometers the ſtem was made ſo large, that the volume of water diſplaced between its leaſt and greateſt immerſions was equal to the whole difference of ſpecific gravity between water and alcohol, or perhaps more; whence its ſcale of diviſions muſt be very ſmall, and could not give the ſpecific gravity with much accuracy. On this account weights were introduced, by means of which the ſtem could be made ſmaller; each weight affording a new commencement of its ſcale; ſo that the ſize of the diviſions on a given length was doubled, tripled, &c. as one or more weights were employed, the diameter of the ſtem being leſſened in the ſubduplicate proportion of the increaſed length of the diviſions. This method, however, in our author's opinion, has been carried to exceſs; and the following is recommended as a proper mean betwixt theſe extremes, to determine the ſpecific gravity of ſpirituous liquors to three places of decimals.

Phil. Tranſ. vol. 80. p. 342.

In this method the weight of water is ſuppoſed to be unity, or 1 with any number of cyphers annexed: "the whole compaſs of numbers, therefore, from rectified ſpirit to water, at 60 degrees of heat, would be the difference between 825, the weight of rectified ſpirit, and 1000 the weight of water, which is 175. To make allowance for the lighteſt ſpirit and heavieſt water, however, at all the common temperatures, the difference may be ſuppoſed 220. The ſtem might ſhow every twenty of theſe diviſions, and thus ten weights would be ſufficient for the whole. Hence the inconvenience of ſhifting the weights, which has always been complained of, would in a great meaſure be avoided: as people verſant in that buſineſs would ſeldom err ſo far as to the whole amount of the difference previous to making any trial. Hence alſo the ſtem may be made ſmall enough, and the ſcale graduated ſo nicely as to make the inſtrument ſufficiently accurate.

According to this arrangement, it would be proper to have the weights adapted to the hydrometer marked with the different ſpecific gravities which they are intended to indicate; Zero on the top of the ſtem without a weight being ſuppoſed to mean 800, and 20 at the bottom to ſignify 820, which number the firſt weight would carry; the ſucceſſive weights being marked, 840, 860, &c.; and the diviſion on the ſtem cut by the fluid under trial, would be a number always to be added to that on the weight; the ſum of the two ſhowing the true ſpecific gravity. The weights ſhould undoubtedly be made to apply on the top of the ſtem, ſo as never to come in contact with the liquor; and in uſing the hydrometer, its ſtem ſhould always be preſſed down lower than the point at which it will ultimately reſt, that by being wetted it may occaſion no reſiſtance to the fluid. The inſtrument itſelf ſhould be of as regular a ſhape and with as few inequalities as poſſible, that all impediments to its motions may be avoided.

HYDROMPHALUS, in medicine and ſurgery, a tumor in the navel, ariſing from a collection of water.

HYDROPHANES, OCULUS MUNDI, or *Lapis Mutabilis*, a kind of precious ſtone highly eſteemed among the ancients, but little known to the moderns till Mr Boyle made his obſervations upon it. Its ſpecific gravity is about 2.048; its colour of an opaque whitiſh brown; it is not ſoluble in acids nor affected by alkalies, but is eaſily cut and poliſhed. Sometimes it gives fire with ſteel, ſometimes not. It is infuſible *per ſe*; but when urged by a blow-pipe, changes to a browniſh brittle ſubſtance. It is found in beds over the opals in Hungary, Sileſia, and Saxony, and over the chalcedonies and agates in Iceland. Theſe ſtones in general are either of a yellowiſh green, milky grey, or of a yellow like that of amber.

The moſt remarkable property of this ſtone is, that it becomes tranſparent by mere infuſion in any aqueous fluid; but gradually reſumes its opacity when dry. There are three of theſe ſtones in the Britiſh muſeum at London; the largeſt of them about the ſize of a cherry ſtone, but of an oval form. It is opaque and coloured like a common yellow pea; it may be ſcratched, though not without difficulty, by a common knife, notwithſtanding which it ſeems to leave a mark upon glaſs. It does not ferment with nitrous acid. When it has lain ſome hours in water, it becomes tranſparent, and of a yellow amber colour. The change begins ſoon after the immerſion, and at one end in form of a little ſpot; but in a ſmall one of the ſame kind, the tranſparency begins round the edges. By degrees the ſpot increaſes, until the whole ſtone becomes uniformly clear throughout: when out of the water it loſes its tranſparency, firſt at one end, and then gradually over the remainder, until the whole has become opaque; which change happens in leſs time than it takes to become tranſparent. This change is not entirely peculiar to the hydrophanes. Bergman informs us, that ſome ſteatites produce the ſame effect; and M. Magellan, that the cruſt of chalcedonies and agates frequently produce the ſame appearance.

Meſſrs Bruckman and Veltheim were the firſt who particularly inquired into the nature of this ſtone, and inveſtigated its properties, many of which were brought to light by their endeavours. Their account is to the following purpoſe. As ſoon as the ſtone is put into water, it exhales a muſty ſmell, ſeveral air-bubbles ariſe, and it becomes gradually tranſparent. Some of the ſtones becomes colourleſs as ſoon as they are thoroughly tranſparent, others have a more or leſs deep yellow colour; ſome acquire a beautiful ruby colour; and, laſtly, others gain a fine colour of mother-of-pearl, or of a bluiſh opal. Whatever be the colour of the liquor in which the hydrophanes is immerſed, it gains only its uſual degree of tranſparency with the colour peculiar to it. When we look at it in the moiſt ſtate, we perceive a luminous point, varying its ſituation as the poſition of the eye is altered. This luminous point is not, according to Mr Bruckman, the immediate image of the ſun, but a reflection of that image refracted in the ſubſtance of the ſtone itſelf, a phenomenon which probably gave riſe to the name of *oculus mundi*. Mr Bruckman left a piece of this ſtone weighing 35 grains ſeven hours in water, the ſpace requiſite to make it perfectly tranſparent; and in that time he found that it had gained three grains in weight. The hydrophanes becomes much ſooner tranſparent when put into hot water; and the ſame happens if it be dipped in a very dilute acid, or rather a very dilute ſolution of alkali. When dipped in oil of vitriol, it becomes very quickly tranſparent, and will continue ſo, on account of the ſtrong attraction of that acid for moiſture, which takes as much from the atmoſphere as is neceſſary to keep the ſtone tranſparent; but its opacity will return if it be dipped in an alkaline liquor and afterwards dried.

HYDROPHOBIA, an averſion or dread of water: a terrible ſymptom of the *rabies canina;* and which has likewiſe been found to take place in violent inflammations of the ſtomach and in hyſteric fits. See MEDICINE-*Index*.

HYDROPHYLACIA, a word uſed by Kircher and ſame others who have written in the ſame ſyſtem, to expreſs thoſe great reſervoirs of water which he places in the Alps and other mountains for the ſupply of rivers which run through the ſeveral lower countries. This he makes to be one of the great uſes of mountains in the economy of the univerſe.

HYDROPHYLLAX, in botany: A genus of the monogynia order, belonging to the tetrandia claſs of plants. The calyx is tetrapartite; the corolla funnel-ſhaped; the fruit two-edged and one ſeeded.

HYDROPHYLLUM, WATER-LEAF: A genus of the monogynia order, belonging to the pentandria claſs of plants; and in the natural method ranking with thoſe of which the order is doubtful. The corolla is campanulated, with five melliferous longitudinal ſtria on the inſide; the ſtigma is bifid; the capſula globoſe and bivalved. There is only one ſpecies, *viz.* the Virginianum, or water-leaf of Morinus. It grows naturally in Canada and many other parts of America on moiſt ſpongy ground. The root is compoſed of many ſtrong fleſhy fibres, from which ariſe many leaves with foot-ſtalks five or ſix inches long, jagged into three, five, or ſeven lobes, almoſt to the midrib, indented on their edges. The flowers are produced in looſe cluſters hanging downward, are bell-ſhaped, and of a dirty white colour. It may be propagated by parting the roots; which ought to be done in autumn, that the plants may be well rooted before ſpring, otherwiſe they will require a great deal of water.

HYDROPS, in medicine, the ſame with DROPSY.

HYDROSCOPE, an inſtrument anciently uſed for the meaſuring of time.

The hydroſcope was a kind of water-clock, conſiſting of a cylindrical tube, conical at bottom: the cylinder was graduated, or marked out with diviſions, to which the top of the water becoming ſucceſſively contiguous, as it trickled out at the vertex of the cone, pointed out the hour. See HYDROSTATICS, ſect. vi.

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